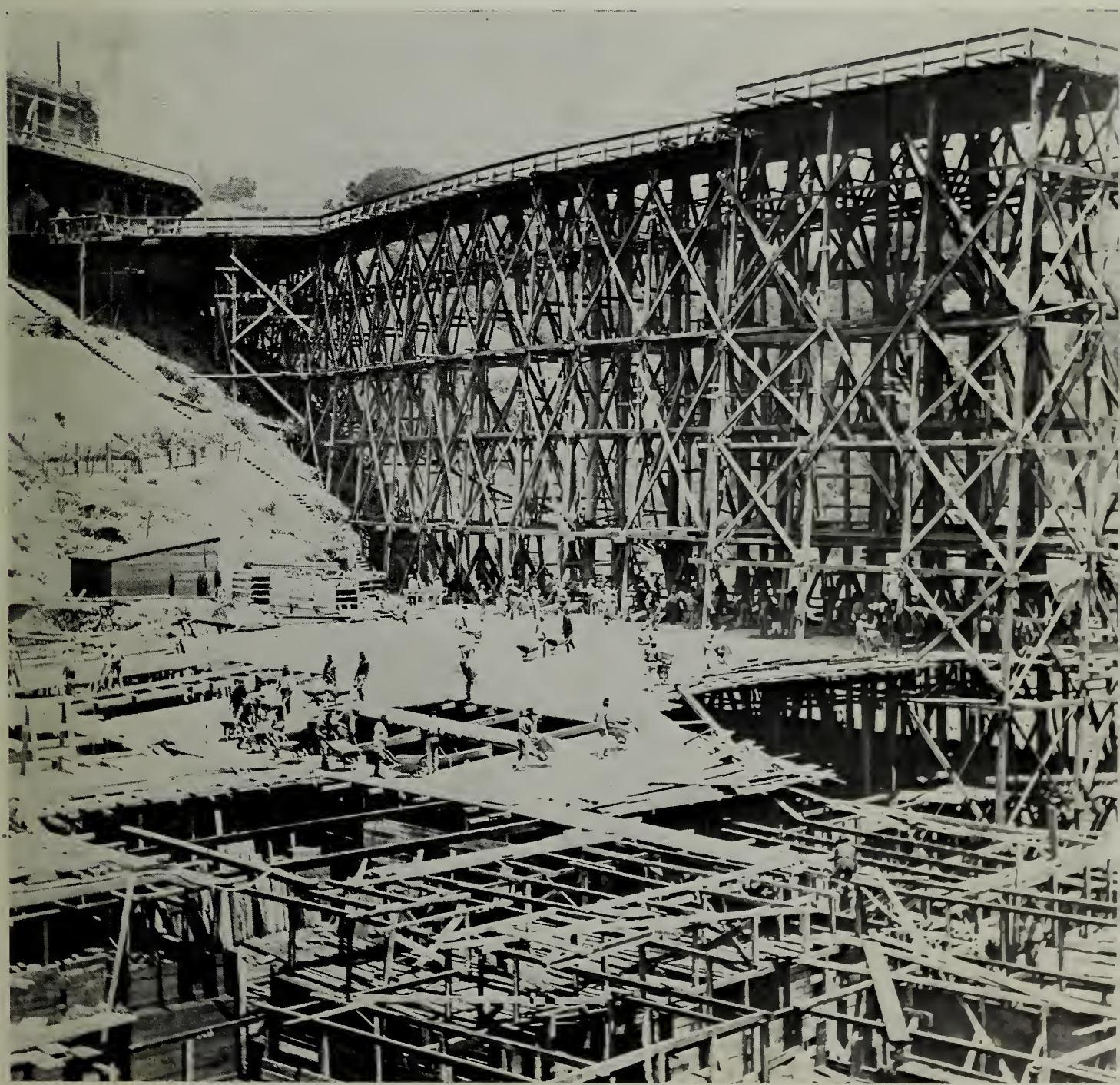
SAN FRANCISCO WATER DEPARTMENT

REPORT FOR FISCAL YEAR

1977-1978



CITY AND COUNTY OF SAN FRANCISCO

GEORGE R. MOSCONE - MAYOR

PUBLIC UTILITIES COMMISSION

John F. Henning, Jr.	President
Claire C. Pilcher	Vice President
H. Welton Flynn	Commissioner
Peter McCrea	Commissioner
John M. Sanger	Commissioner
John B. Wentz	General Manager

REPORT OF THE

SAN FRANCISCO WATER DEPARTMENT

FISCAL YEAR 1977-78

EUGENE J. KELLEHER
ACTING GENERAL MANAGER
AND CHIEF ENGINEER

THE PICTURE ON THE FRONT COVER

IS CRYSTAL SPRINGS DAM UNDER

CONSTRUCTION 90 YEARS AGO

GENERAL MANAGER'S REPORT

AND

FISCAL YEAR 1977-78 HIGHLIGHTS

GENERAL MANAGER'S REPORT

As a municipal utility owned and operated by the City and County of San Francisco, the Water Department is under a public mandate to deliver to all consumers a safe potable water in adequate quantity; to comply with all applicable federal and state regulations for water quality and public safety; to equitably charge and collect for water services; to provide for the needs of the present and future through continued planning and improvements; and to conduct all departmental operations efficiently at reasonable cost.

In carrying out this mandate the Water Department serves water to an estimated one and three quarter million people within the City and County of San Francisco, most of the urban area of San Mateo County, the Cities of Palo Alto, Mountain View, Sunnyvale and Milpitas in northern Santa Clara County, and the Hayward, Sunol and Fremont areas in southern Alameda County.

In all its operations the Water Department is entirely self-supporting. All operations, maintenance, improvements, taxes, bond interest and redemptions including the original bond issue for purchase of the Spring Valley Water Company were paid for out of revenues.

WATER CONSERVATION

Due to the severe drought conditions brought about by two consecutive dry years, with 1976-77 being the driest on record, the Public Utilities Commission declared the existence of an emergency on January 25, 1977. The Public Utilities Commission on March 22, 1977, adopted a mandatory water rationing plan to effect a minimum water use reduction of 25 percent in the service area of the San Francisco Water Department. The Public Utilities Commission on January 24, 1978, suspended the mandatory water rationing program. This action was taken because winter precipitation in 1977-78 was well above normal and the water reserves had been replenished to the point where mandatory rationing was no longer required.

The Water Conservation Program had its greatest impact during 1977-78, seriously effecting all phases of the Departments' operations. Water consumption during the period of mandatory water rationing was 65 percent of normal and the corresponding reduction in revenues resulted in budgetary reductions in the Capital Program and the deferring of projects whenever possible. The collection of $1,260,000 in excess water use charges and deferment of Capital projects allowed the Department to fund its

operations without an additional rate increase. Besides the serious fiscal problems, there was also a tremendous increase in work load in administering the Water Conservation Program.

The drought and the Water Conservation Program are covered in greater detail in the attached "Highlights."

CAPITAL PROGRAM

The San Francisco Water Department area includes not only San Francisco, but also most of the Peninsula cities in San Mateo County, and other South Bay communities in Santa Clara and Alameda Counties. In the last twenty years systemwide consumption has increased 29.2 percent. In the last five years the systemwide consumption decreased 26.8 percent, mainly because of last year's drought. Suburban consumption, which represents about 60 percent of the total system consumption today, has increased only moderately in the last ten years as compared to the rapid rise experienced in the 1950's and early 1960's.

Because of lower water sales revenue caused by the drought and mandatory water rationing, and because of the Department's desire to limit the necessary rate increase, Capital expenditures for 1977-78 were drastically cut back. The Public Utilities Commission recommendation of $2,197,000 for Additions and Betterments and $5,031,000 for Facilities Maintenance, was reduced to $582,000 and $2,342,000, respectively in the adopted budget.

The deferral of maintenance and capital work will mean greater expenditures in future years to catch up on system maintenance and improvement.

RATE INCREASE AND REDUCTION

When the Public Utilities Commission instituted a Mandatory Water Conservation Plan, which required a reduction in water use by all customers of at least 25 percent, it also became necessary to place a 33 percent surcharge on water sales commencing July 1, 1977, to ensure sufficient funds to meet the budget for fiscal year 1977-78. On January 24, 1978, the Public Utilities Commission suspended the mandatory plan because of the replenishment of water supplies and directed the Water Department to adjust its water rates.

The Water Department's estimated revenues from water sales for fiscal year 1977-78, ($29,837,500), based on water sales at 75 percent of normal were sharply affected by public response

to the drought which reduced water sales to approximately 65 percent of normal through January of 1978. The effect of this extra conservation reduced anticipated revenues by approximately $2,353,000. This reduction was partially offset from collection of excess water use charges (penalties) of $1,260,000. The net deficiency, however, remained at approximately $1,100,000, which had reduced unappropriated revenues by a like amount.

Because of the Water Conservation lessons learned throughout the drought period, it was anticipated that water sales would rise to only about 85 percent of prior normal usage, especially with the adoption of voluntary water conservation, as urged by the Mayor and the Public Utilities Commission. It was, therefore, estimated that water sales for the last four months of the fiscal year (ending June 30, 1978), would increase by 12 percent, or approximately $1,300,000 above original budgeted revenue estimates.

The San Francisco Water Department recommended that water rates be reduced 12 percent effective with meter readings commencing March 1, 1978. It further recommended that a flat 12 percent reduction be made in all suburban water rates and that the 12 percent reduction within San Francisco be 4.8 cents per 100 cubic feet. (100 cubic feet = 1 unit = 478 gallons). The recommended reduction in water rates was approved by the Public Utilities Commission on February 14, 1978.

HOUSEHOLDER RATE

The Public Utilities Commission authorized a Water Department revenue requirements study for fiscal year 1978-79. The study was to include redesign of the water rate structure within San Francisco only. Redesigned rates were to include, if possible, a "lifeline" or house holder's rate schedule as requested by the San Francisco Board of Supervisors.

Brown and Caldwell, Consulting Engineers, of Pasadena, California, were selected to perform the study since they had performed two earlier water rate studies for the Department. As a result, the time needed and the cost of the study were both substantially reduced. Their resultant study was furnished to the Public Utilities Commission on January 10, 1978.

The Study reflected on the fact that water rate structures, incorporating descending rate blocks as employed in San Francisco, were usually justified because large volume water users (wet industries), have better load factors than small volume users (residential customers). However, with almost no large wet

HOUSEHOLDER RATE - CONTINUED

industries remaining in San Francisco, the justification for descending rate blocks disappears. There are no penalty costs associated with serving smaller users and no substantial economy in serving larger users. The Consultant, therefore, recommended that a single rate block schedule be adopted for use in San Francisco.

The major goal of relief in cost for water to a large segment of those who are living on fixed incomes, or who otherwise could be eligible for "lifeline" rates, can be reached with the establishment of a single rate block. In effect, this proper restructuring of the prevailing rate schedule becomes a "householders" rate system, which encourages water conservation while reducing the prevailing unit cost at the homeowner's level. The single rate increases the cost of water to large users previously favored by declining rate blocks. Nevertheless, with no remaining justification for these lower rates and with water conservation resulting from an economic disincentive to wasteful use of cheap water, the single rate was considered a viable alternative to the antiquated water rate block schedules.

On April 25, 1978, the Public Utilities Commission established a single rate of 37 cents per 100 cubic feet of water delivered within San Francisco, commencing with meter readings taken on and after July 1, 1978.

COLLECTION OF UTILITY TAX, INDUSTRIAL WASTE SURCHARGE, AND SEWER SERVICE CHARGE

Under City Ordinances the Water Department is charged with the responsibility of collecting a Utility Tax, an Industrial Water Surcharge, and a Sewer Service Charge.

Utility Tax collections are placed in the General Fund. Funds collected under the Industrial Waste Surcharge and Sewer Service Charge are each deposited in special funds under the jurisdiction of the Department of Public Works.

Taxes and charges collected during 1977-78 were:

Utility Tax	$ 641,652
Industrial Waste Surcharge	34,973
Sewer Service Charge	17,585,309
	$ 18,261,934

STATE AID AND FEDERAL AID

Under the Federal Drought Relief Act of 1977, the Water Department has applied to the Government for a grant of 20 percent of the cost of our drought relief program. Total cost of this program amounted to $1,170,200, much less than the $1,882,000 originally estimated. The main reasons for the lessor cost was the purchase of State Water. We purchased only 4,354 acre feet instead of the 10,000 acre feet originally contracted for.

The requested federal grant amounts to $234,040, and is now being audited before payment.

During 1977-78, no state monetary aid was received.

GENERAL MANAGER RETIRES

Kenneth R. Boyd retired effective June 2, 1978, as General Manager of the Water Department. He began his lengthy and distinguished career as a watershed worker with the Hetch Hetchy System in 1938. He moved to the Water Department a year later where over the years he promoted through the ranks to Manager of the City Distribution Division, Assistant General Manager (Administrative), and to Assistant General Manager, Operations and Maintenance. He assumed the responsibilities of General Manager in 1976 and in that capacity, he developed and administered the water rationing plan which enabled the local community to function with the least amount of inconvenience and economic disruption during the critical period of the Water Department.

His service with the Public Utilities and his contributions in talent and time to many professional and technical committees including serving on the executive board of the American Water Works Association, were of immeasurable benefit not only to the citizens of San Francisco but to water consumers throughout the nation.

Eugene J. Kelleher
Acting General Manager
and Chief Engineer

CRYSTAL SPRINGS DAM EARTHQUAKE STABILITY STUDY

HIGHLIGHTS

Drought

We reported last year that 1976-77 was the driest year on record. Two consecutive record dry years left San Francisco's total water storage at 132.36 billion gallons on June 30, 1977, approximately 45 percent of capacity. Storage in the reservoirs would have been much less without the voluntary conservation program started in July of 1976 and the mandatory rationing program started on March 22, 1977. By November 30, 1977, just prior to the major portion of the precipitation season, total water storage had been reduced to 95.2 billion gallons, approximately 33 percent of capacity.

For 1977-78 water production both locally and in the Sierras was appproximately 132 percent above normal. Whereas Bay Area Reservoir production in 1976-77 was a minus 1.06 billion gallons, that is, evaporative losses excluded inflow, water production in 1977-78 was 31 billion gallons. The average production for the prior forty years has been 18.9 billion gallons. On January 24, 1978, the Public Utilities Commission suspended the mandatory Water Conservation Plan because of the replenishment of storage, marking an end to the drought emergency. On June 30, 1978, San Francisco-s total water storage was 249.0 billion gallons as compared to 132.36 billion gallons only a year earlier.

Mandatory Rationing

The mandatory water rationing plan initiated on March 22, 1977, proved to be extremely effective in reducing water consumption in San Francisco. During the period the plan was in effect, water consumption in San Francisco was reduced 35 percent as compared to a similar period of use in 1976.

Administering the plan had a serious effect on all phases of the Departments' operations. Under the plan, which established approximately 1 million monthly allotments for the 160,000 accounts in San Francisco, each customer had the opportunity to request an exception to the established allotment. Exceptions were granted because of an increase in occupancy, change in business, or when the health and safety of the customer was affected. Additionally, all residential customers granted allotments in excess of 300 gallons per day were required to justify their need in writing. By the end of the mandatory rationing, the Department had received and replied to 50,000 requests for exception to the individual allotments. Processing these requests required a tremendous amount of man hours. The Conservation Unit of the

Mandatory Rationing - Continued

Department was enlarged with temporary help to handle these requests and even then, help from other divisions was required on a continuing basis to prevent an accumulation of a backlog.

The effectiveness of the Rationing Program can be measured by the following results:

April	28% Reduction
May	39% "
June	40% "
July	40% "
August	35% "
September	35% "
October	34% "
November	33% "
December	34% "
January	34% "

With the suspension of mandatory rationing, the Public Utilities Commission established a 15 percent Voluntary Water Conservation Program to mitigate the results of future droughts and reduce the need for costly Capital expenditures for water facilities.

Sunset Wells

The abandoned Sunset Wells were one of the additional sources of water that was investigated for possible use during the drought. Between 1930 and 1935, the twenty-one Sunset Wells along 45th Avenue, were used to augment the city water supply during an emergency period. At that time they supplied about 6.0 million gallons per day to the system.

In preparation for reactivating these wells in the event that the drought continued another year, the Department conducted draw down tests on several of the wells to determine their present-day safe yield. It was determined that the fifteen remaining wells could produce approximately 6.5 million gallons per day.

Preliminary engineering plans for the lift pump station, well vault renovation and necessary pipelines have been put on file for possible future use.

Drought Relief Program

Under the spur of the Federal Drought Relief Act of 1977, the Water Department undertook several projects to lessen the effects of the drought. Under the provisions of the Act, drought relief projects were eligible for a Federal grant of 20 percent of cost.

The program consisted of six projects. The details and expenditure for each of the projects is listed below:

1. The purchase of State water through a newly constructed turn-out from the South Bay Aqueduct into San Antonio Reservoir. (State water for Marin Municipal Water District was also transferred through this facility).

Connection Cost	$ 53,329
Water Purchase (4,352 acre feet)	533,573

2. Connection to receive surplus water from Presidio of San Francisco.

Connection Cost	6,352
Water Purchase (44.56 MG)	19,711

3. Administration and operation of Conservation and Rationing Program.

Total Expenditure	517,042

4. Waste and Leak Detection Program. This program identified substantial amounts of leakage and waste particularly by non-paying municipal agencies.

Program Cost	20,680

5. Feasibility study for reactivation of the abandoned Sunset Wells in the City. The findings of this study indicate that the wells could yield approximately 6.5 MGD if restored. However, restoration cost and the need for pumping and chlorination would be extremely high.

Study Cost	17,540

Drought Relief Program - Continued

6. Reuse of water from main flushing. Normally water used to flush out main is wasted to sewers. Under this program, flush water was pumped into tank trucks and transported to City parks and used for irrigation.

Program Cost	$	1,970
Total Drought Relief Program Cost		1,170,198
Federal Grant Amount		234,040

Transfer State Water to Marin County

To aid the severly impacted Marin Municipal Water District, a five power agreement between the San Francisco Water Department, the State Department of Water Resources, the City of Hayward, the East Bay Municipal Utility District, and the beneficiary, Marin Municipal Water District was signed on March 21, 1977.

Under the agreement, San Francisco agreed to take water releases from the South Bay Aqueduct into San Antonio Reservoir and deliver treated water from the Sunol Filtration Plant into the City of Hayward system. Actual cost to San Francisco shall be reimbursed by Marin. Water taken by Hayward is transferred to Marin via the East Bay Municipal Utility District and the emergency pipeline on the Richmond-San Rafael Bridge.

Delivery from the State into San Antonio Reservoir began on April 5, 1977, at the rate of 10 million gallons per day (MGD). Deliveries to Hayward also began on April 5.

Delivery of State water for Marin ended August 31, 1977. Total water delivered, 1.496 billion gallons.

Delivery of water to Marin via the Hayward connection ended January 20, 1978. The remaining balance of 57.7 MG has since been relinquished by Marin Municipal Water District.

State Water Purchase

When the severity of the current drought became apparent, the Metropolitan Water District of Southern California at the State's request agreed to release 375,000 acre feet of their water entitlement to the north. The loss was to be made up by increasing pumping from the Colorado River Aqueduct.

State Water Purchase - Continued

On February 23, 1977, the Water Department applied to the State Department of Water Resources for a 30 MGD supply.

The State then agreed to sell 10,000 acre feet (3.26 billion gallons) of water to San Francisco for approximately 1 million dollars.

Water import started on September 16, 1977, through an enlarged turn-out installed on the State's South Bay Aqueduct. The original connection was installed in March, 1977 to accommodate the transfer of State Project water to the Marin Municipal Water District.

Although the original intention was to import 10,000 acre feet of water, water import to the city was terminated on January 23, 1978, after a transfer of 4352 acre feet. The drought was over, above normal rainfall had returned.

Turn-out Connection Cost	$ 53,329
Water Purchase Cost	533,573

Water from Presidio

A connection between the water supply of the Presidio and the City's main was completed in early June, 1977. Beginning June 14, surplus water from the Presidio's Lobos Creek source entered the city's system. The total delivery from the Presidio amounted to 44.56 million gallons. Water transfer ended January 24, 1978.

GENERAL WATER SUPPLY INFORMATION

DELIVERY FOR CONSUMPTION

In addition to serving San Francisco, the Water Department supplies water to most of the urban areas of San Mateo County; to the Cities of Palo Alto, Mountain View, Sunnyvale and Milpitas in northern Santa Clara County; and to the Hayward, Fremont and Sunol areas in southern Alameda County.

Approximately 80 percent of the water delivered to consumers is imported from Hetch Hetchy and the balance from Bay Area sources.

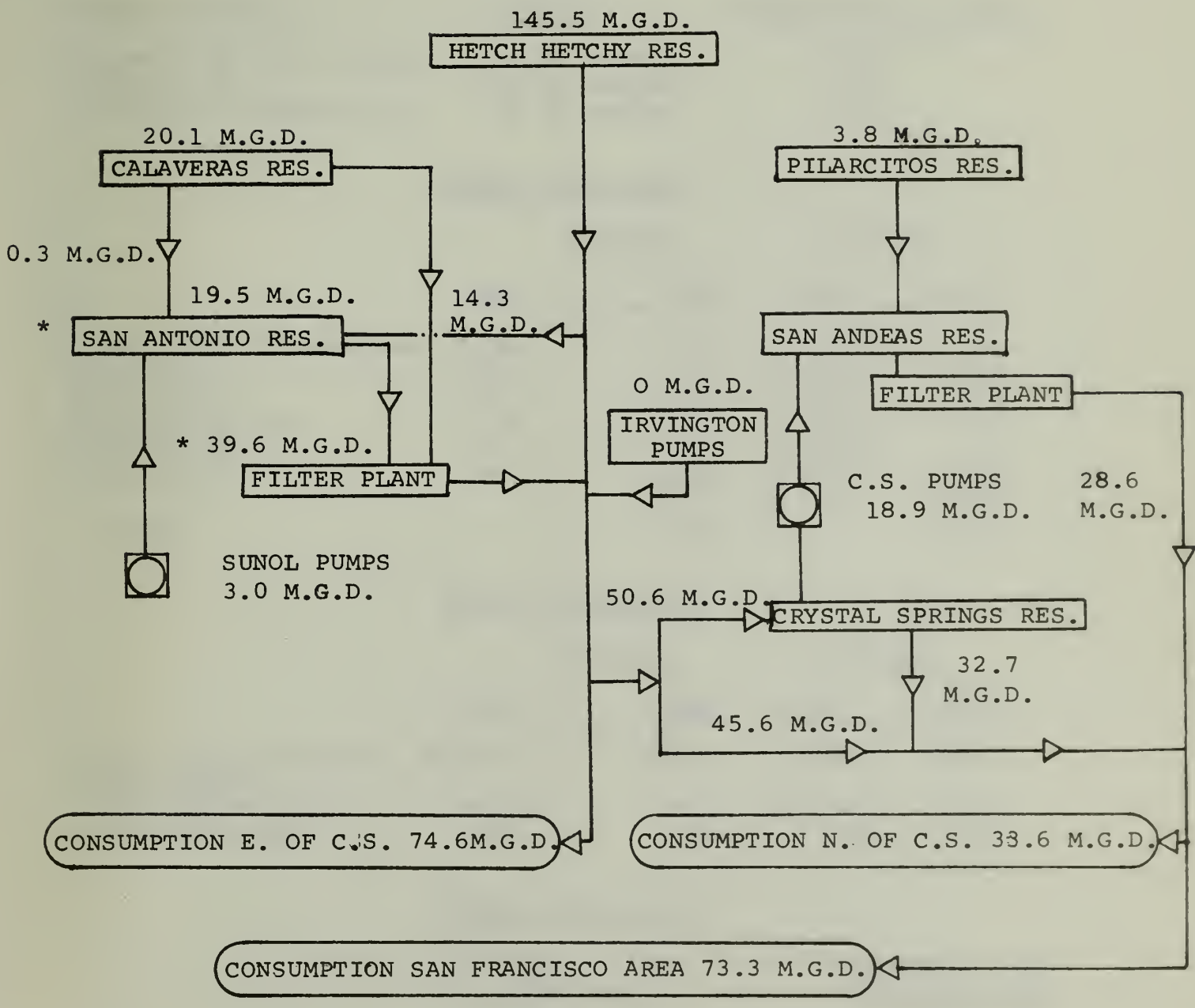
DELIVERIES FOR CONSUMPTION

1977 - 1978

	Million Gallons	MGD Average	Percent
From Hetch Hetchy	53,109.3	145.5	80.2
From Alameda and Peninsula Sources	13,153.7	36.0	19.8
TOTAL	66,263.0	181.5	100.0

TRANSMISSION

1977-78 AVERAGES



TOTAL SUBURBAN	108.2	M.G.D.
SAN FRANCISCO	73.3	M.G.D.
SYSTEM TOTAL	181.5	M.G.D.

* DEPT. WATER RESOURCES FOR S.F.W.D. TOTAL 1,418.7 M.G.
MARIN CO. WATER DEPT. (NOT INCLUDED IN S.F.W.D. OPERATION)
TOTALED 623.7 M.G.

WATER PRODUCTION, TRANSMISSION AND CONSUMPTION

RAINFALL

Gaging Station	1977-78	Comparison to Normal
Crystal Springs Cottage	29.86 inches	116%
Pilarcitos	50.82 inches	115%
Calaveras (Alameda Co.)	28.79 inches	132%

WATER PRODUCTION

	1976-77		1977-78	
	MG	MGD	MG	MGD
Sunol Filter Galleries	690.9	1.9	1,512.5	4.1
Calaveras	- 395.6	- 1.1	21,385.4	58.6
San Antonio	- 281.3	- 0.8	2,687.4	7.4
Crystal Springs	-0-	-0-	5,485.1	*
San Andreas	- 409.2	- 1.1	1,307.8	3.6
Pilarcitos	29.1	0.1	1,595.5	4.4
TOTAL		- 1.0		78.1

WATER IMPORTATION

	1976-77		1977-78	
	MG	MGD	MG	MGD
Hetch Hetchy Sources	89,334.5	244.8	53,109.3	145.5
Sunol Valley Filtration Plant	5,708.9	15.6	14,454.4	39.6
Irvington Pumps	-0-	-0-	-0-	-0-

WATER CONSUMPTION

	Million Gallons Per Day	% Decrease over Previous Year
City	73.37	- 20.2
Suburban	108.17	- 23.0
Systemwide	181.54	- 21.9

*Seven months production only; record for July through November, 1977 incomplete.

NOTE :-

AQUEDUCT DEVELOPMENT TO MEET WATER CONSU
INCLUDES ONLY WORK FOR DELIVERY TO THE PEN
RESERVOIRS & CONSUMERS FROM MAIN AQUE
& DOES NOT INCLUDE FACILITIES FOR DISTRIBU
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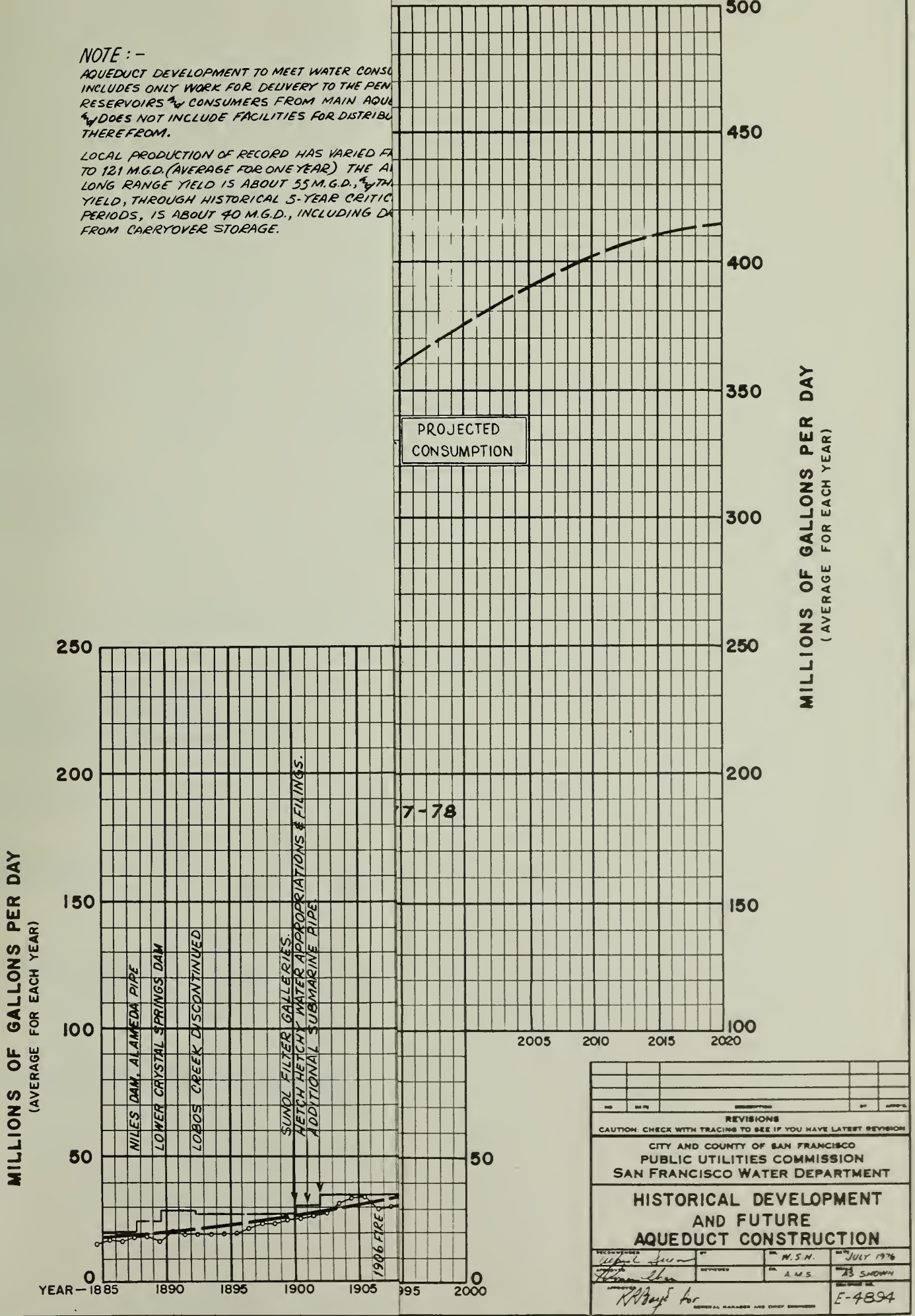
TO 121 M.G.D. (AVERAGE FOR ONE YEAR) THE AV
LONG RANGE YIELD IS ABOUT 55 M.G.D., & TH
YIELD, THROUGH HISTORICAL 5-YEAR CRITIC
PERIODS, IS ABOUT 40 M.G.D., INCLUDING DR
FROM CARRYOVER STORAGE.



REVISIONS
CAUTION: CHECK WITH TRACING TO SEE IF YOU HAVE LATEST REVISION

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

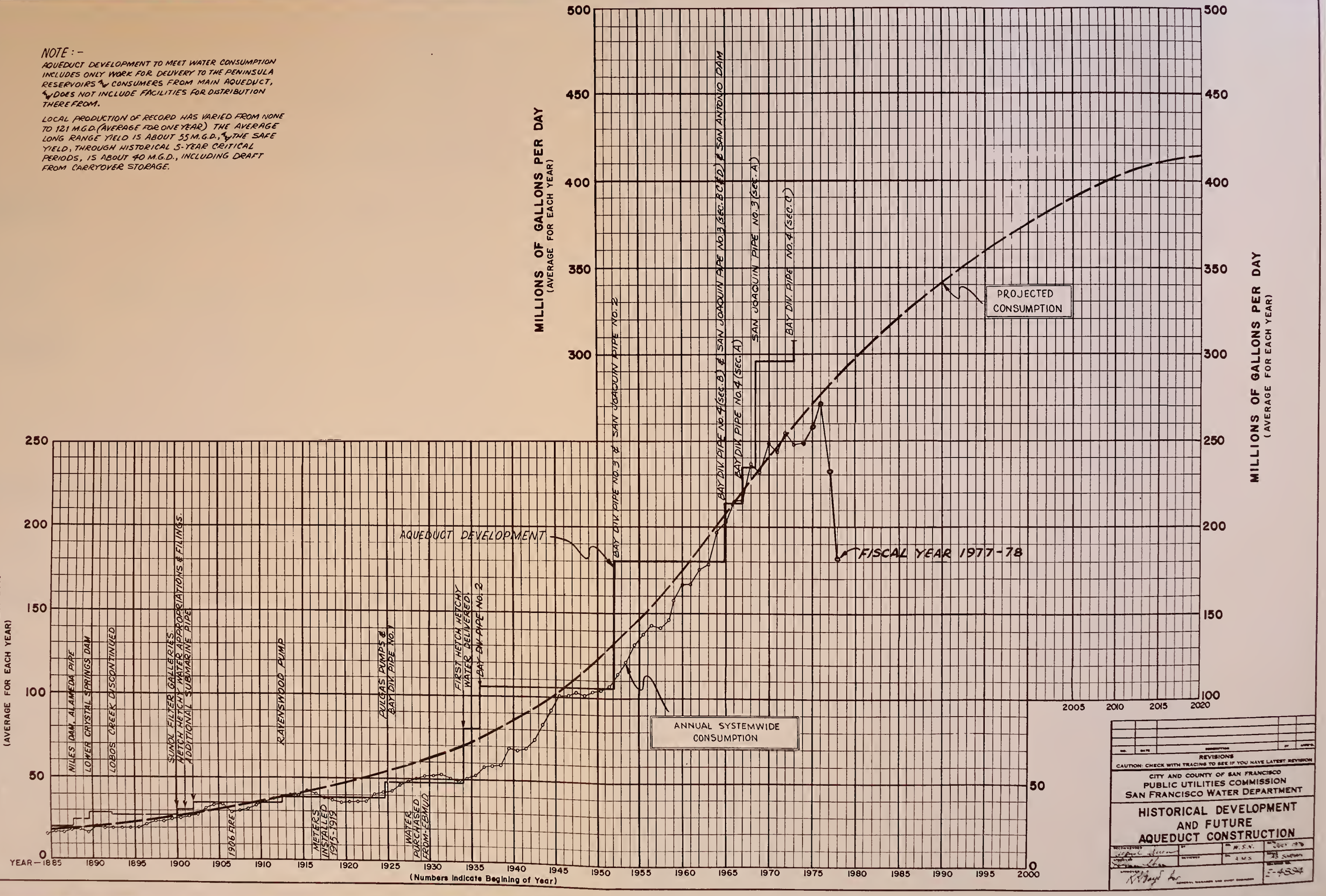
HISTORICAL DEVELOPMENT
AND FUTURE
AQUEDUCT CONSTRUCTION

RECOMMENDED	BY	DR. N.S.N.	DATE JULY 1976
APPROVED	REVISED	DR. A.M.S.	SCALE AS SHOWN
APPROVED RW Bayer for GENERAL MANAGER AND CHIEF ENGINEER			DRAWING NO. E-4894

NOTE :-

AQUEDUCT DEVELOPMENT TO MEET WATER CONSUMPTION INCLUDES ONLY WORK FOR DELIVERY TO THE PENINSULA RESERVOIRS & CONSUMERS FROM MAIN AQUEDUCT, & DOES NOT INCLUDE FACILITIES FOR DISTRIBUTION THERE FROM.

LOCAL PRODUCTION OF RECORD HAS VARIED FROM NONE TO 121 M.G.D. (AVERAGE FOR ONE YEAR) THE AVERAGE LONG RANGE YIELD IS ABOUT 55 M.G.D., & THE SAFE YIELD, THROUGH HISTORICAL 5-YEAR CRITICAL PERIODS, IS ABOUT 40 M.G.D., INCLUDING DRAFT FROM CARRYOVER STORAGE.



REVISIONS
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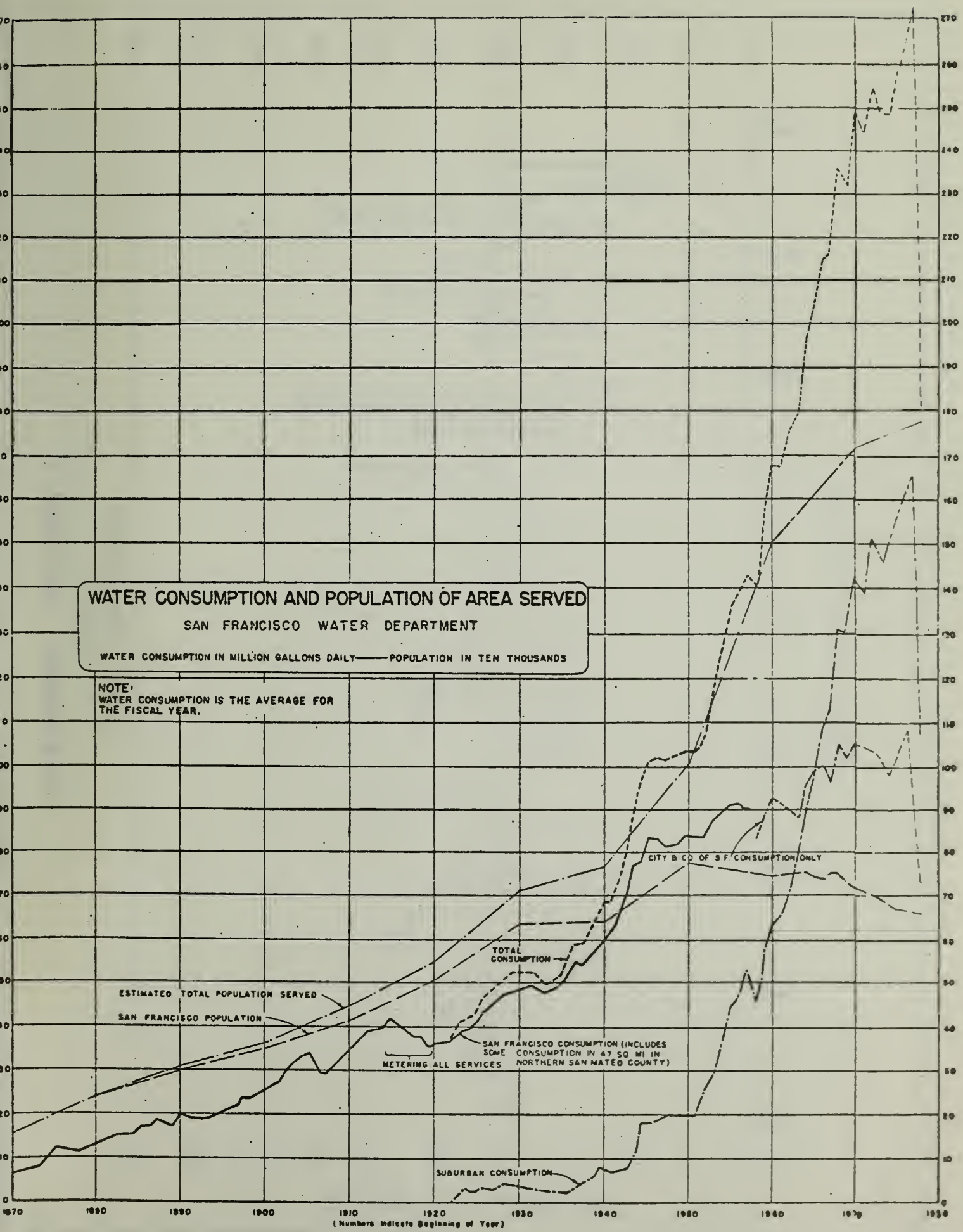
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

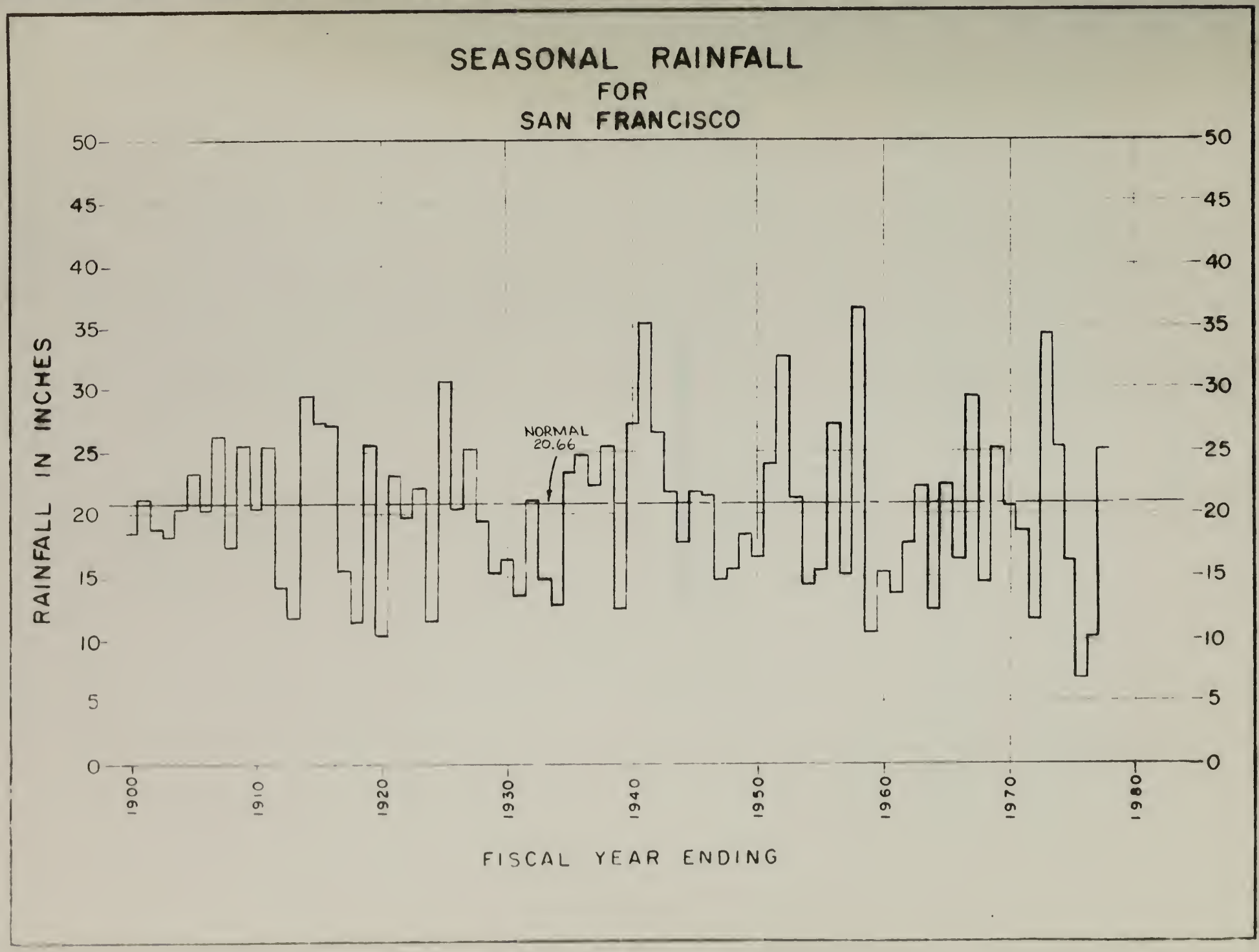
HISTORICAL DEVELOPMENT AND FUTURE AQUEDUCT CONSTRUCTION

PER CAPITA USE IN SAN FRANCISCO

	1940	1950	1960	1970	1977-78
Average Daily Consumption in San Francisco (MGD)	47.9	68.9	80.7	98.9	64.4
San Francisco Population	634,536	775,357	740,316	715,674	658,700
Average Daily Use Per Capita (Gallons)	76	89	109	138	98
Classes of Consumers (Percentage of Total San Francisco Consumption):					
Residential	39.4	37.7	39.1	36.5	32.2
Commercial* & Industrial	51.8	54.5	52.4	54.5	58.5
Municipal & Miscellaneous	8.8	7.8	8.5	9.0	9.3

*Commercial includes apartments.


WATER CONSUMPTION AND POPULATION OF AREA SERVED
SAN FRANCISCO WATER DEPARTMENT
WATER CONSUMPTION IN MILLION GALLONS DAILY——POPULATION IN TEN THOUSANDS
NOTE:
WATER CONSUMPTION IS THE AVERAGE FOR THE FISCAL YEAR.
CITY & CO OF S.F. CONSUMPTION ONLY
TOTAL CONSUMPTION
ESTIMATED TOTAL POPULATION SERVED
SAN FRANCISCO POPULATION
SAN FRANCISCO CONSUMPTION (INCLUDES SOME CONSUMPTION IN 47 SQ MI IN NORTHERN SAN MATEO COUNTY)
METERING ALL SERVICES
SUBURBAN CONSUMPTION
1870
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
(Numbers Indicate Beginning of Year)


SEASONAL RAINFALL
FOR
SAN FRANCISCO
RAINFALL IN INCHES
50
45
40
35
30
25
20
15
10
5
0
NORMAL
20.66
1900
1910
1920
1930
1940
1950
1960
1970
1980
FISCAL YEAR ENDING

REVENUE AND EXPENDITURE

REVENUE

The Water Department is entirely self supporting. All operating costs, taxes, capital costs, bond interest and bond redemption are paid from revenues. In addition, the Department furnishes free water to other San Francisco city departments that are tax supported.

Water Sales were 2.1 percent more than for the previous year. Net sales in San Francisco produced 51.2 percent of the water sales revenue, with the balance of 48.8 percent coming from deliveries outside of the City.

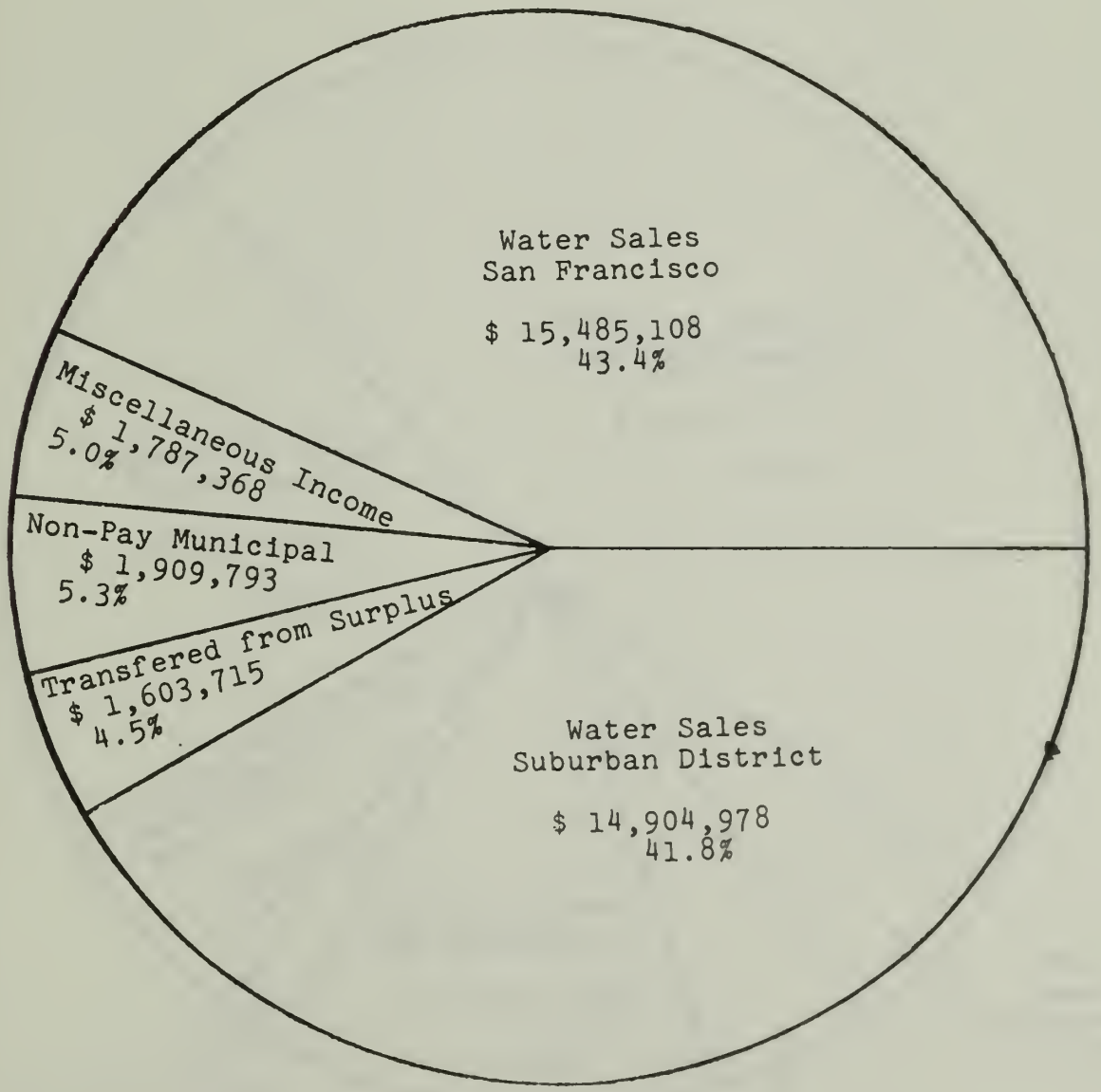
	Metered Quantities	Revenue
San Francisco	38.0%	51.2%
Suburban	62.0%	48.8%

Most suburban sales are to other agencies, who in turn resell the water through their own distribution systems.

The following tables give detail of revenue sources and expenditures.

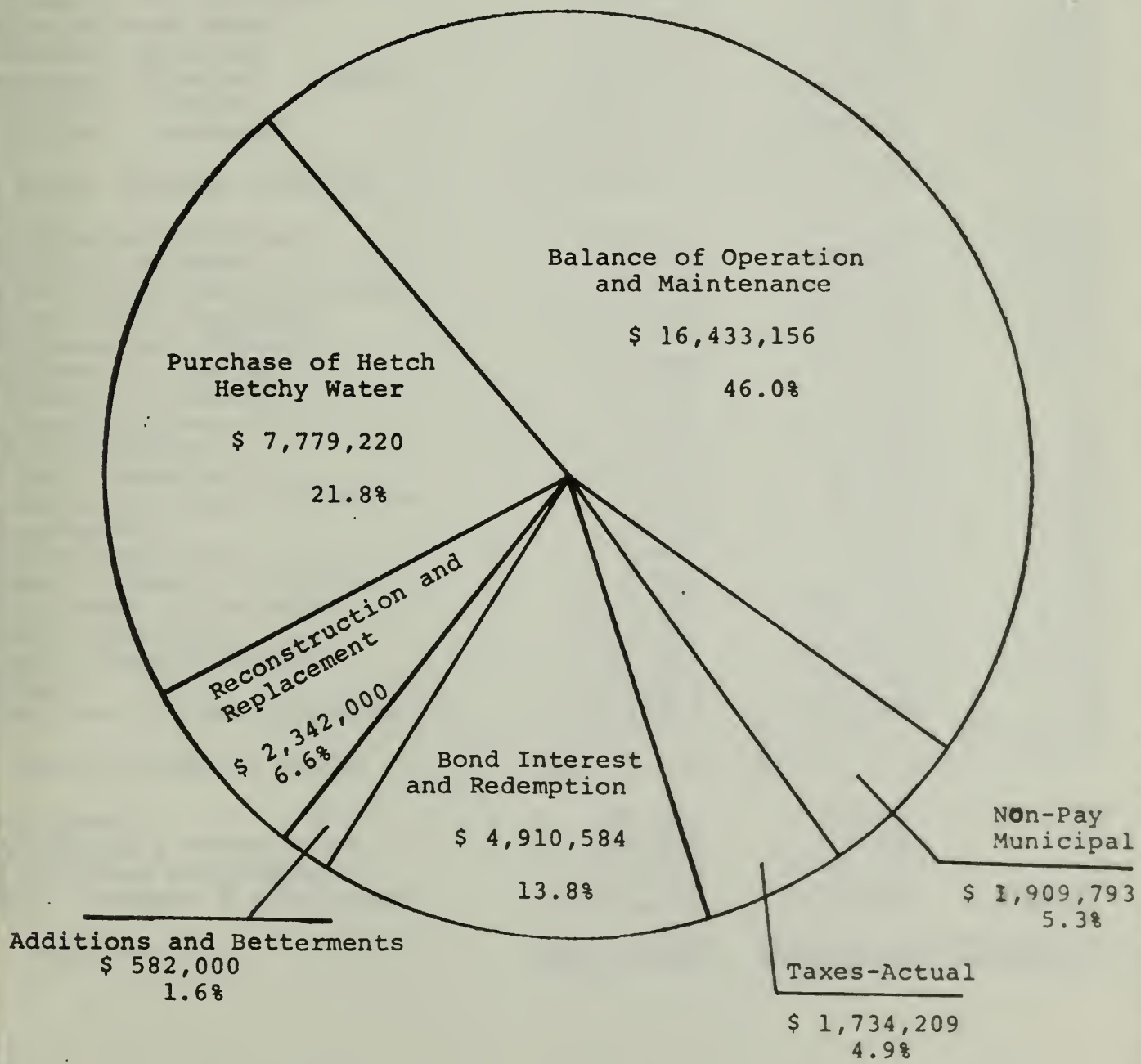
SOURCE OF INCOME

$ 35,690,962



DISPOSITION OF INCOME

$ 35,690,962



SAN FRANCISCO WATER DEPARTMENT

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)
FISCAL YEAR 1977-78

DESCRIPTION	BUDGET	ACTUAL	-UNDER,OVER
Permanent Salaries	$ 3,031,696	$ 2,801,750	$- 229,946
Allowance for Overtime	36,080	30,990	- 5,090
Overtime & Holiday - Crafts	299,500	299,500	-0-
Allowance for Holidays	19,495	13,269	- 6,226
Extended Work Week	73,440	67,161	- 6,279
Temporary Salaries	115,200	110,975	- 4,225
Temporary Salaries - Crafts	360,000	333,811	- 26,189
Salaries - Crafts	5,594,317	5,250,311	- 344,006
Salaries - Gardeners	269,874	268,413	- 1,461
TOTAL PERSONAL SERVICES	$ 9,799,602	$ 9,176,180	$- 623,422
Contractual Services	1,140,241	1,297,672	157,431
Purchase of Water	1,072,700	604,220	- 468,480
Other Professional Services	60,500	52,789	- 7,711
Materials & Supplies	1,634,000	1,624,358	- 9,642
Compensation Insurance	146,000	138,616	- 7,384
Judgments & Claims	170,480	180,214	9,734
Fidelity Insurance	1,195	1,195	-0-
Automobile Insurance	72,320	72,320	-0-
Fire Insurance	11,466	11,466	-0-
Other Insurance	51,771	46,863	- 4,908
Commissions for Collections	18,000	14,574	- 3,426
Assessments	5,000	1,337	- 3,663
Membership Dues	1,830	1,317	- 513
Fees, Licenses & Permits	6,000	7,150	1,150
Retirement Allowances	1,855,953	1,855,953	-0-
Social Security	448,062	443,025	- 5,037
Health Service System	300,100	310,117	10,017
Taxes	1,743,230	1,734,209	- 9,021
Services of Other Departments	1,155,582	1,155,582	-0-
TOTAL OPERATING BUDGET	$19,694,032	$18,729,157	$- 964,875
Equipment	$ 268,832	$ 265,452	- 3,380
Additions & Betterments	582,000	582,000	-0-
Facilities Maintenance	2,342,000	2,342,000	-0-
Bond Interest & Redemption	5,350,584	4,910,584	- 440,000
TOTAL BUDGET	$28,237,448	$26,829,193	$-1,408,255

SAN FRANCISCO WATER DEPARTMENT

COMPARISON OF ESTIMATED AND ACTUAL RECEIPTS
FISCAL YEAR 1977-78

RECEIPTS

REVENUE	BUDGET	ACTUAL	-UNDER,OVER
Collections from Sale of Water	$ 33,255,000	$ 29,405,397	$- 3,849,603
New Installations	125,000	227,974	102,974
Rents	400,000	890,438	490,438
Interest	240,000	177,753	- 62,247
Sale of Walnuts	10,000	19,606	9,606
Miscellaneous Revenue	25,000	24,958	- 42
TOTAL GROSS REVENUE	$ 34,055,000	$ 30,746,126	$- 3,308,874
RECEIPTS BY TRANSFER			
From Unappropriated Revenue (Prior Year)	$ 1,357,448	$ 3,258,067	$ 1,900,619
TOTAL RECEIPTS	$ 35,412,448	$ 34,004,193	$- 1,408,255
LESS			
Allocation of Revenue to Hetch Hetchy Project	$ 7,175,000	$ 7,175,000	$ -0-
TOTAL BUDGET	$ 28,237,448	$ 26,829,193	$- 1,408,255

DISTRIBUTION AND CONSUMPTION

BAY DIVISION PIPELINE BRIDGE AND PIPES

REHABILITATION PROJECT

SYSTEMWIDE METERED DELIVERIES

Within the City of San Francisco the Department distributes, delivers and meters water directly to consumers. Outside of San Francisco, water is delivered and metered from transmission mains to water purveyors who distribute to customers in their service areas.

METERED DELIVERIES

1977 - 1978

	Million Cubic Feet Year	M.G.D	Percent	Decrease Over Prior Year
City*	3,140.2	64.4	38.0	26.4%
Suburban**	5,115.7	104.8	62.0	26.3%
Systemwide	8,255.9	169.2	100.0	26.3%

* Includes 249.5 million cubic feet (1,866.3 million gallons) used by municipal non-pay accounts.

**Includes 72.4 million cubic feet (541.6 million gallons) used by suburban non-pay accounts.

TOTAL WATER SALES

FISCAL YEAR - 1977-78

Area, Utility or District	Metered Delivery (1) 100 Cu. Ft.	Average MGD	Charges $
SAN MATEO COUNTY			
Bayshore City - (Dimond Public Utility District)	83,832	0.17	31,615
Brisbane, City of	89,175	0.18	26,978
Guadalupe Valley Municipal Improvement District	56,925	0.12	24,719
Daly City, City of	809,325	1.66	253,065
Colma (Broadmoor, California Water Service Company)	186,217	0.38	58,560
South San Francisco (California Water Service Company)	2,029,703	4.16	610,058
North Coast County Water District	1,133,449	2.32	322,970
Coastside County Water District	171,294	0.35	59,559
San Bruno, City of	773,163	1.58	252,303
S.F. International Airport	420,551	0.86	156,088
Millbrae, City of	910,926	1.87	274,039
Burlingame, City of	1,567,448	3.21	463,733
Hillsborough, Town of	1,006,330	2.06	311,733
San Mateo (California Water Service Company)	4,147,193	8.50	1,128,816
Belmont County Water District	1,380,075	2.83	410,294
San Carlos (California Water Service Company)	1,386,608	2.84	415,733

TOTAL WATER SALES

FISCAL YEAR - 1977-78

Area, Utility or District	Metered 100 Cu. Ft.	Delivery (1) Average MGD	Charges $
SAN MATEO COUNTY (CONT'D.)			
Westborough County Water District	282,590	0.58	85,783
Redwood City, City of	2,751,369	5.64	793,552
Redwood City (Calif. Water Service Company)	206,177	0.42	64,460
Cordilleras Mutual Water Assoc.	1,533	0.01	968
Palomar Park County Water District	12,702	0.03	5,547
Woodside (California Water Service Company)	483,519	0.99	155,478
Bear Gulch District (California Water Service Company)	919,108	1.88	278,982
Menlo Park, City of	1,236,465	2.53	370,247
Menlo Park, (California Water Service Company)	1,140,193	2.34	344,370
East Palo Alto Water District (Formerly Ravenswood Water District)	642,196	1.32	188,107
Skyline County Water District	37,712	0.08	14,418
Estero Municipal Improvement District	1,230,635	2.52	358,516
Los Trancos County Water District	16,333	0.03	6,850
Other Water delivered in San Mateo	456,927	0.94	150,560
TOTAL FOR SAN MATEO COUNTY	25,569,673	52.40	7,618,101

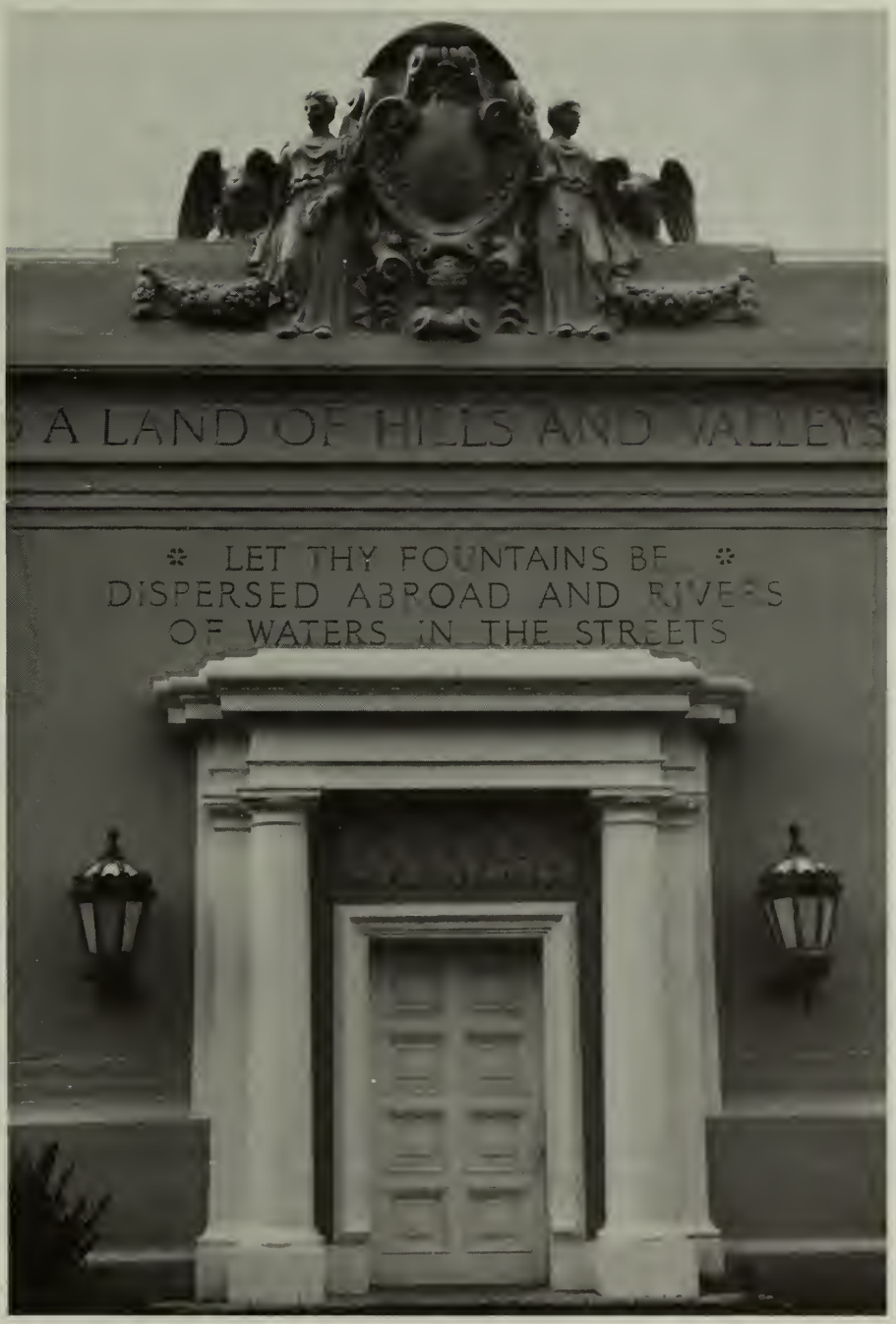
TOTAL WATER SALES

FISCAL YEAR - 1977-78

Area, Utility or District	Metered Delivery (1) 100 Cu. Ft.	Average MGD	Charges $
TOTAL FOR SAN MATEO, SANTA CLARA, & ALAMEDA COUNTIES	50,433,165	103.35	14,909,058
SUBURBAN NON-PAY MUNICIPAL	724,261	1.49	
TOTAL SUBURBAN	51,157,426	104.84	
SAN FRANCISCO COUNTY			
San Francisco	28,906,575	59.24	16,263,887
San Francisco Non-Pay Municipal	2,495,311	5.11	
Total for San Francisco County	31,401,886	64.35	
TOTAL FOR SAN FRANCISCO WATER DEPARTMENT SYSTEM	82,559,312	169.19	31,172,945(2)

1] Metered delivery does not include system loss which for 1977-78 amounted to 7.3 percent of total water sales.

2] Represents total billing for water sold without adjustment for allowances, etc.



CENTRAL PUMPING STATION, SLOAT BLVD.,

RE-ROOFING AND BUILDING REHABILITATION PROJECT

CITY DISTRIBUTION DIVISION

Responsibilities and Functions

This division is responsible for operating and maintaining all pump stations in the City, the hilly terrain of the City requires pumping to the various higher pressure zones. The larger pump stations pump water to the reservoirs from which water is distributed. The smaller pump stations are usually hydropneumatic facilities that serve small areas from air pressurized tanks.

The division operates and maintains many reservoirs and tanks in the City to distribute water to consumers.

The meter program includes removing and resetting, disconnecting and reconnecting, inspection, testing, and repairs of meters.

The maintenance of service programs includes testing, inspecting, restoring, rearranging, repairing, and replacement of water services.

The maintenance of mains program involves replacement and reconstruction of water distribution mains in the City.

Additionally, the responsibility for maintaining the Department's physical plant, operating equipment, and automotive equipment belong to the major shops operated by this Division. The Division also operates the Department's central warehouse and pipe yard.

The field forces work on new construction of mains and services, maintenance of facilities, and emergency services. A Department's gateman responds to all fires of two alarms or more to regulate valves to provide increased water pressure as needed.

Major Facilities

City Corporation Yard: includes Division's administrative office, central control headquarters; machine, meter, auto, carpenter and welding shops; truck and auto storage; warehouse and pipe yard.

13 reservoirs and large tanks with a total capacity of 414 million gallons

47 structures

7 small tanks

Fiscal Year Operating Results

		1976-77	1977-78
1.	Main breaks and leaks repaired:	136	121
2.	Number of services:	158,465	159,019
3.	New services installed:	723	779
4.	Services inspected:	826	259
5.	Services repaired:	1,569	1,653
6.	Services renewed:		
	by SFWD:	2,798	2,772
	by Contract:	551	-0-
7.	Linear feet of main flushed:	-0-	132,561
8.	Individual services flushed:	106	71
9	Valves inspected (operated and checked):	3,623	3,637
10.	Number of valves:	15,807	15,899
11.	Valves repaired and rebuilt:	163	184
12.	Service maintenance:	14,237	15,870
13.	Meters installed:	4,409	4,287
14.	Meters replaced:	3,650	3,100
15.	Meters repaired:		
	In shop:	3,770	3,674
	In field:	7,888	9,029
16.	Meters in service:	160,714	161,272
17.	Hydrants installed and relocated:	46	45
18.	Main extensions: Feet	15,840	10,543
19:	Mains replaced: Feet	6,169	21,899
20.	Connections:	52	54
21.	Leak detection survey: (miles of main)	85	96

Fiscal Year Operating Results - Continued

22. During the year the shops repaired, rebuilt, or fabricated diesel engines, motors, pumps, special pipe fittings, valve operators, etc. The auto shop performed all routine as well as major maintenance on the Department's fleet of trucks and autos.

23. Water main inventory - City Distribution System:

Main inventory 7/1/77	1,181.72	miles
New main added 1977-78	6.15	"
Old main removed 1977-78	5.39	"
Main inventory 6/30/78	1,182.48	"

24. Electric Power Used, City Pump Stations 15.794 Million KWHR

NEW CONTROL PANEL

CRYSTAL SPRINGS PUMPING STATION

WATER IMPOUNDMENT AND TRANSMISSION

Responsibilities and Functions

The responsibilities for water impoundment and transmission rest with the Department's Suburban Operations Division, which is made up of two operating parts. The Peninsula operations is responsible for facilities in San Mateo and Santa Clara Counties, the Alameda operations for facilities in Alameda County.

The principal function of the Division is to operate and maintain the transmission pipelines, pump stations, and reservoirs to deliver water to our suburban customers and to San Francisco. The Division also manages the watersheds, pipeline rights-of-way, and other lands of the City.

Major Facilities Operated and Maintained

Crystal Springs, San Andreas, Pilarcitos, Calaveras, and San Antonio Dams and Reservoirs. Total storage 77.8 billion gallons.

Four Bay Division pipelines, total lengths 112 miles

Coast Range, Pulgas, and Crystal Springs Bypass Tunnels. 8.6 miles total.

Five major pipelines north of Crystal Springs to San Francisco. 126 miles.

Six pump stations. 1977-78 electric power used 8.297 million KWhr.

Millbrae Corporation Yard.

Sunol Headquarters for Alameda Division.

Personnel Resources

Salaries	33
Crafts	81
Total	114

1977-78 Operating Results

1977-78 began as the third successive drought year and, during the early part of the year, water was received from the State Department of Water Resources, partly for transmission to Marin and partly for use in the San Francisco Water Department service area. The generous precipitation during the winter resulted in satisfactory recovery of all reservoirs.

Winter storms resulted in considerable operational problems due to water quality defects: Crystal Springs Reservoir water was unfit for admission to the system for several months, and the Crystal Springs Balancing Reservoir had to be drained to enable the removal of sand and organic debris.

The "Hazardous Fire Area" designation imposed on the watershed area by the State Department of Forestry in June 1977 was continued until November 1 and was reimposed on June 1, 1978.

Vandalism and trespassing on watershed lands are increasing problems. The number of trespassers evicted during the year runs into the thousands.

Five large leaks in transmission pipelines and three in cross-connections were repaired during the year.

The number of meters tested and calibrated during the year was 156. These are the large size meters on resale services.

In addition to the major facilities, the work of Suburban Divisions is connected with the operations and maintenance of the following listed facilities and equipment:

62,000 Acs. of watershed and other lands. Vandalism and trespassing are increasing every year.

185 miles of all-weather roads. These are mostly gravel roads requiring periodic grading and re-establishment of drainage ditches, etc.

63 miles of property fences. Fences are periodically checked; broken or missing fences are repaired or replaced.

Over 100 miles of lease boundary fencing. Fence materials are furnished by San Francisco Water Department; installations and maintenance by lessee.

Nearly 100 miles of fire roads are maintained on the watersheds.

Ground and landscape maintenance is supplied for Peninsula and Alameda Yards, public areas of Sunol and Pulgas Water Temples, two filtration plants, pump stations, balancing reservoirs and other areas.

960 resale and retail services.

120 miles of right-of-way.

WATER QUALITY AND TREATMENT

WATER QUALITY DIVISION

Responsibilities and Functions

To insure the safety and purity of the water delivered to consumers by applying the necessary treatment and by employing a systematic program of sampling and testing to verify compliance with State and Federal Standards.

This program safeguards the quality of water through operating filter plants, the chemical treatments of water and its testing programs. All analytical work in Biology, Microbiology and Chemistry are performed in the Millbrae laboratory and in the field. The storage reservoirs throughout the system are also monitored to control algae growth and to safeguard the quality of the stored water.

The Division also has the responsibility for the Department's radio communication and security.

Major Facilities

A. Division Headquarters and Laboratory - Millbrae Yard

B. Sunol Valley Water Treatment Plant - 80 MGD Capacity

C. San Andreas Water Treatment Plant - 40 MGD Capacity

D. Various Chlorination, Fluoridation, Turbidity control, and Lime treatment stations.

Personnel Resources

43 employees.

Divisional Highlights

During the past fiscal year Water Quality Division personnel spent considerable time reviewing the impact of the new Federal and State drinking water standards on the Water Department's ability to be in compliance with them.

In order to comply with these rigorous standards Division personnel worked with architects engaged in designing a new office and laboratory building; three new water chemists positions were requested and modern laboratory equipment was requisitioned. To develop long range supply and quality requirements, the Department engaged Brown and Caldwell and James Montgomery Engineers

Divisional Highlights - Continued

(joint venture) to make a study of the Hetch Hetchy Aqueduct system. The initial study was an extensive review of water quality data to see how the department faired with the Primary Drinking Water Standards. The study was expanded to include synthetic organic chemicals and Trihalomethanes when the E.P.A. announced a preliminary standard of 100 ppb trihalomethane in late 1977. The report should be finished in late 1978.

Fiscal Year Operating Results

	1976-77	1977-78
Volume water treated	5,827 MG (16.0 MGD)	14,225 MG (39.0 MGD)
Chemicals Used:		
Chlorine	166,304 lbs.	375,703 lbs.
Alum	196,040 lbs.	2,455,126 lbs.
Lime	178,216 lbs.	931,205 lbs.
Others	24,514 lbs.	222,485 lbs.

San Andreas Water Treatment Plant	1976-77	1977-78
Volume water treated	13,482 MG (36.9 MGD)	10,592 MG (29.0 MGD)
Chemicals Used:		
Chlorine	69,841 lbs.	56,813 lbs.
Alum	172,197 lbs.	285,202 lbs.
Sodium Hydroxide	373,928 lbs.	338,141 lbs.
Others	42,784 lbs.	109,717 lbs.

Million Gallons Per day Disinfected (chlorinated)

1976-77	1977-78
317	247

Chlorination Stations	Chlorine Used (lbs.)	
	1976-77	1977-78
Hetch Hetchy Aqueduct (Tesla Portal)	1,227,782	902,178
Sunol Aqueduct	2,221	3,729

Fiscal Year Operating Results - Continued

Chlorination Stations - Continued	Chlorine Used (lbs.) 1976-77	1977-78
Peninsula Aqueducts (four stations)	271,805	245,732
City Distribution (ten stations)	33,737	38,590

Hypochlorination Station

5 Hetch Hetchy Mountain and 2 Bay Area Locations used total 1,605 gallons. 14 percent Sodium Hypochlorite solution. 1,618 used in fiscal year 1976-77.

New Mains Disinfected

1976-77	1977-78
32,180 l.f.	52,195 l.f.

Fluoridation

Fluoridated water is served only to consumers north of Crystal Springs and to the City.

Fluoride treatment is applied at four fluoride stations and at the San Andreas Water Treatment Plant.

	1976-77	1977-78
Water treated	49,554 MG	38,299 MG
Hydrofluosilic acid used	1,733,502 lbs.	1,043,361 lbs.
Sodium Silicofluoride Used	87,497 lbs.	81,560 lbs.

Corrosion Control Hetch Hetchy Aqueduct

To neutralize the corrosive action of the extremely soft Hetch Hetchy water, lime is added at the Rock River Lime Plant.

	1976-77	1977-78
Volume of water treated	89,352 MG	53,167 MG
Lime used:	3,538,917 lbs.	2,096,024 lbs.

Fiscal Year Operating Results - Continued

Reservoir Turbidity Control

Three alum treatment installations which control runoff turbidity into Crystal Springs and San Andreas Reservoirs were in use during the year. In 1975-76 the first year of the two-year drought only 5,400 gallons of alum was used in these stations. By comparison, 111,327 gallons of alum was used in 1977-78.

Reservoir Algae Control

The five Bay Area Reservoirs were treated with a total of 44,400 lbs. of copper sulfate to control aquatic growth. In fiscal year 1976-77 28,790 lbs. were used.

	1976-77	1977-78
Number of Customer complaints	175	153

Sampling and Testing

During the year thousands of water samples were taken from reservoirs, transmission pipelines, and the City's Distribution system.

The Millbrae laboratory performed the following number of tests:

	1976-77	1977-78
Chemical	35,000	32,519
Microbiological	27,000	25,337
Physical	26,000	33,830
Number of water samples	18,063	25,847

WATER QUALITY AND OPERATIONS DATA

Water quality and operations statistics for the year are presented hereafter in the following order:

Chlorination Stations
Fluoridation Station
Lime Treatment Station
Alum Treatment Station
Copper Sulfate Treatment of Storage Reservoirs
(Tables for Bacteriological and Mineral Analyses may be found in the Miscellaneous Statistics Section).

OPERATION OF CHLORINE STATIONS

1977 - 1978

LOCATION		TOTAL OPERATING TIME (MONTHS)	CHLORINE USED (lbs.)	
Division	Station		Station Total	Division Total
H.H.W.S.	Tesla Portal	11.4	902178	902178
Alameda	Calaveras	5.9	78263	
	Sunol Aqueduct	12.0	3729	
	Sunol Valley W.T.P.	11.5	297440	379432
Peninsula	Sunset Supply Line	5.6	75461	
	Crystal Springs No. 2	5.6	68116	
	San Andreas No. 2	NA	46963	
	San Andreas No. 3	NA	55192	
	San Andreas W.T.P.	12.0	56813	302545
City Distribution	College Hill	12.0	3478	
	Lombard	12.0	1312	
	McLaren Pump	12.0	970	
	Merced Manor	12.0	1835	
	Stanford Heights	12.0	1306	
	Summit	12.0	319	
	Sunset	12.0	13522	
	Sutro	12.0	1517	
	University Mound North	12.0	1007	
	University Mound South	12.0	13168	38434
		Total Chlorine Gas Used		1622589
		Plus Total Chlorine as NaOCL		2081
		Total Chlorine Used		1624670

OPERATION OF FLUORIDE STATIONS

1977 - 1978

STATION	MONTHS OPERATED	FLOW (m.g.)	FLUORIDE USED		TOTAL FLUORIDE ADDED (mg/l)	TOTAL FLUORIDE (mg/l)
			Na_2SiF_6 (lbs.)	H_2SiF_6 (lbs.)		
CSBPT	6.3	15613.95		623575	0.92	0.96
SSL	3.9	6642.68	41987		0.46	0.51
CS #2	4.0	5449.92	39573		0.52	0.57
SAWTP	12.0	10592.17		419786	0.90	0.97
TOTALS	26.2	38298.72	81560	1043361		

OPERATION OF LIME TREATMENT STATION

STATION	MONTHS OPERATED	LIME USED (lbs.)	FLOW (m.g.)	LIME ADDED	
				lbs./m.g.	mg/l
ROCK RIVER	11.4	2096024	53166.6	39.4	4.7

OPERATION OF ALUM TREATMENT STATIONS

STATION	GALLONS	ALUM USED		REMARKS
		$AL_2(SO_4)_3$	AL_2O_3	
SAWYER CAMP PLANTS	88934			
STONE CIRCLE	22393			
TOTALS	111327			

COPPER SULFATE USAGE

1977 - 1978

RESERVOIR	DATE	AMOUNT $CuSO_4$ (LBS.)	STORAGE (m.g.)	ORGANISM(S) NECESSITATING TREATMENT
Calaveras	March 78 May 78	10,900 500	3,900	Aphanizomenon Hydrodiction, Spirogyra
San Antonio				
Upper C.S.	April 78	8,000	8,103	Ceratium
Lower C.S.	Dec. 77 May 78 June 78	1,200 4,100 14,800	9,202 20 11,793	Melosira General algae control Staurastrum, Dynobryan
San Andreas	May 78	1,800	5,718	Cyclotella
Pilarcitos	Oct. 77 April 78	1,600 1,400	708 849	Anabaena Anabaena, Mallomonas
Stone Dam	July 77 Aug. 77	50 50		Turbidity control Turbidity control
TOTALS:		44,400	40,293	
Priest				
Moccasin	July-Aug 77	2,860		Spirogyra, Desmidium
		47,260		Mougeotia

CONTRACTS

COOLING TOWER ON ROOF OF 425 MASON ST.
AS PART OF WATER CONSERVATION PROGRAM

CONTRACTS

During the fiscal year, the Engineering Division handled 17 formal construction contracts valued at $4,602,070.00. Eight were new contracts awarded during the year, of which 3 were completed and 5 were under construction. Nine contracts were carried over from the previous year six of which were completed during the fiscal year.

The work done under formal contracts has been separated into five main categories, as follows:

No. of Contracts	Description	Total Value of Contracts
3	Additions and Betterments to Supply transmission, treatment and miscellaneous facilities	$ 805,571.00
5	Reconstruction and Replacement of Water Facilities	420,842.00
1	Bond Fund Projects	792,149.00
8	City Distribution Division --- Replacements and Additions	2,583,508.00
3	City Distribution Division --- Replacements and Additions - incorporated in Department of Public Works Contracts	---
		$4,602,070.00
	Work done under contracts of San Francisco Redevelopment, Transportation & Water Pollution programs (estimated & actual) Total	190,000.00
	Grand Total	$4,792,070.00

CONTRACT DATA 1977-78

WATER DEPARTMENT CONTRACTS

CONTRACT NO.	TITLE OF CONTRACT	DIVISION	NUMBER OF BIDDERS	CONTRACTOR	DATE OF AWARD	DATE OF COMPLETION	PERCENT COMPLETE 6-30-78	BID PRICE	TOTAL COST TO 6-30-78
1640	Crystal Springs Pump Station Renovation	Peninsula	8	Dalzell Corporation	2-22-77	-	73%	742,172.00	486,606.37
1692	Installation of 6" D.I.M. in Sanchez St. bet. 23rd & Randall Sts.	C.D.D.	7	MGM Construction Co.	2-8-77	6-28-77	100%	321,510.00	334,901.90
1693	Installation of 6" & 8" D.I.M. in Turk St.	C.D.D.	3	Dalton Construction Co.	4-12-77	7-27-77	100%	111,620.00	106 077.60
1708	Replace Fence in San Mateo County	Peninsula	5	Bar Fence Co.	2-22-77	6-30-77	100%	35,775.00	34,766.04
1715	Installation of 6" D.I.M. in Grant Ave. bet. Greenwich & Francisco Streets	C.D.D.	4	Pat Kennelly Construction	5-10-77	8-17-77	100%	82,406.00	76,765.50
1718	Remote Control of Line Valve in Bay Division Pipeline #4 at E. Pulgas, San Mateo County	Peninsula	3	Amelco Co.	6-14-77	-	54%	24,499.00	12,800.00
1721	Reconditioning San Andreas Pipeline #1	Peninsula	3	Ameron Inc.	4-26-77	10-20-77	100%	219,500.00	230,300.00 plus + 28,190.00 claim (258,490.00)
1722	Rehabilitation of Dumbarton Pipeline Bridge & Pipes	Peninsula	4	D. W. Nicholson Corp.	4-12-77	-	62%	792,149.00	508,897.41

A

CONTRACT DATA 1977-78

WATER DEPARTMENT CONTRACTS

CONTRACT NO.	TITLE OF CONTRACT	DIVISION	NUMBER OF BIDDERS	CONTRACTOR	DATE OF AWARD	DATE OF COMPLETION	PERCENT COMPLETE 6-30-78	BID PRICE	TOTAL COST TO 6-30-78
1723	Renovation of Summit Pump Station	General	4	Dalzell Corporation	5-23-78	-	-	38,900.00	-
1724	Installation of 18" Steel Main in Sloat Blvd. bet. 35th Ave. & Ulloa St.(Feeder Main)	C.D.D.	5	W. R. Thomason, Inc.	5-24-77	10-24-77	100%	228,820.00	232,371.80
1729	Repaving of Street & Sidewalk Openings for the San Francisco Water Dept. for Fiscal Year Ending 6-30-79	General	1	Pacific Pavements Co.	5-23-78	-	-	791,400.00	-
1731	Addition to Rock River Lime Treatment Plant in Tuolomne County	General	5	Monterey Mechanical Company	1-10-78	6-30-78	100%	56,800.00	56,800.00
1734	Modification of Air Conditioning System,425 Mason	General	2	Pribuss Engineering, Inc.	11-22-77	-	75%	25,309.00	15,674.24
1736R	Repaving of Street and Sidewalk Openings for the San Francisco Water Dept. for fiscal Year ending 6-30-78	General	1	Pacific Pavements Co.	7-26-77	6-30-78	100%	734,900.00	734,900.00

CONTRACT DATA 1977-78

WATER DEPARTMENT CONTRACTS

CONTRACT NO.	TITLE OF CONTRACT	DIVISION	NUMBER OF BIDDERS	CONTRACTOR	DATE OF AWARD	DATE OF COMPLETION	PERCENT COMPLETE 6-30-78	BID PRICE	TOTAL COST TO 6-30-78
1737	Installation of 18" Steel Main in Niagra, Cayuga & other Streets	C.D.D.	7	McGuire and Hester	11-8-77	-	41%	238,775.00	78,574.97
1739	Building Repairs Central Pumping Station, S.F.	General	6	Leon Carlen	2-28-78	-	58%	45,476.60	25,019.58
1745	Installation of 30" Steel Main in Howard St. bet 3rd & 4th Sts.	C.D.D.	3	Dalton Construction Co.	4-25-78	6-21-78	100%	70,770.00	68,316.60

C

PROFESSIONAL SERVICES CONTRACTS

During the year six Professional Services Agreements were made with private consulting firms. This type of agreement is used for the performance of work that requires specialized experience and personnel.

Professional services contracts and agreements for the fiscal year were as follows:

1. Waste Water Survey - The Pitometer Associates.

2. Recreational and Environmental Planning Services, Peninsula Watershed Lands - EDAW, Inc.

3. Plans, Specifications and Consulting Services During Construction of Addition to Sunol Valley Water Filtration Plant - Brown and Caldwell - Montgomery.

4. Plans, Specifications and Consulting Services During Construction of Balancing Reservoir for Crystal Springs By-Pass Tunnel and Appurtenant Pumping Station - Brown and Caldwell - Montgomery.

5. Inspection and study of Earthquate stability of Crystal Springs Dam - W. A. Wahler & Associates in Association with Lindvall, Richler & Associates and Group Ten Systems.

6. Plans and Specifications for Suburban Operation and Control Facilities - Garretson, Elmendorf, Zinov, Reiben, Architects and Engineers.

LAND, LEASES, PERMITS AND PROPERTY TAXES

LAND, LEASES, PERMITS AND TAXES

Land Transactions:

At the beginning of the fiscal year the Department owned a total of 62,268.07 acres of land. Sales during the year resulted in a net decrease in holdings of 3.72 acres, leaving a new total of 62,264.35 acres.

	PURCHASES (Acres)	SALES (Acres)
Purchases:	0	
Sales:		
Sale of Property		3.299
Condemnation Action		0.426
Net Decrease in Acres	0	3.725

Leases:

During the year there were eight new and renegotiated leases.

40	Agricultural leases
36	Others
76	Total Current Leases

Permits:

Ninety-four revocable permits were issued and thirty-three revocable were cancelled.

14	Homeowners
1	Organizations
32	Governmental Agencies
16	Commercial
21	Utility Companies
10	Temporary
94	Total Permits

Land and Agriculture:

1977-78

Miscellaneous Receipts from Rentals	$ 989,151
Walnuts	22,212
Total Receipts	$1,011,363

Taxes

The Department paid total property taxes in other counties as follows:

Alameda County	$ 979,122
Santa Clara County	189,064
San Mateo County	566,023
Total Taxes Paid in other Counties	$1,734,209

WATER RIGHTS - ALAMEDA CREEK

WATER RIGHTS - ALAMEDA CREEK

In accordance with the 1916 and subsequent 1936 and other Alameda County Water District Agreements, the Department released water for replenishment of the underground supply of the Niles Cone. The total release entering Niles Cone during 1977-78 was 226.083 million gallons.

The quantities of water due the District and the quantities released by the Water Department to the District for replenishing the underground water for each of the past ten years are as follows:

YEAR	DUE THE DISTRICT	RELEASED TO DISTRICT
1968-69	120,938,000 Gallons	1,762,598,000 Gallons
1969-70	78,683,000 "	1,529,317,000 "
1970-71	468,548,000 "	1,674,187,000 "
1971-72	None "	1,262,560,000 "
1972-73	189,533,000 "	683,516,000 "
1973-74	790,327,000 "	1,418,714,000 "
1974-75	254,610,000 "	1,430,995,000 "
1975-76	None "	691,882,000 "
1976-77	None "	114,912,000 "
1977-78	274,684,000 "	226,083,000 "

The net accumulated advance release to the Alameda County Water District since 1935 in accordance with the terms of the 1936 Agreement amount to the 47,451 million gallons reported as of June 30, 1978.

During the fiscal year, the tenants on the City's Well Field property near Pleasanton pumped about 1,512 million gallons of water from City-owned wells for irrigation of this leased property.

During the fiscal year, the lessees on Department lands bordering Laguna and Alameda Creeks at Sunol used for irrigation about 181 million gallons of water pumped directly from these creeks.

FINANCIAL STATEMENTS

ACCOUNTING AND AUDITING

The accounts of the San Francisco Water Department are maintained strictly in accordance with the requirements of the California State Public Utilities Commission and Section 64 of the City Charter. The accounts of the Department have been so coordinated with the Controller's system that no encumbrance or expenditure against budget estimates can be incurred without prior certification from the Controller that funds are available. As provided in Ordinance 9.0621, an annual audit of the Department is made as of June 30 by a firm of certified public accountants.

1977-78 Operating Expenses show a net increase of $2,464,058.52 as shown by the following tabulation:

Operating Revenue Deductions

	Increase	Decrease
Source of Supply	$ 471,738.39	
Pumping Expenses	129,924.48	
Purification Expenses	237,693.02	
Transmission and Distribution Expenses	239,769.65	
Customer Accounts - Expenses	226,191.89	
Administrative and General	141,731.58	
*Municipal Taxes, Comparison	1,059,358.08	
Miscellaneous Expenses	774,272.59	
Taxes Actual		$ 7,958.78
Provision for Depreciation	16,337.62	
Standby Charge & Purchase of Water		825,000.00
		832,958.78
Net Increase		2,464,058.52
TOTALS	$ 3,297,017.30	$3,297,017.30

*Water delivered to Municipal Departments offset by taxes.

An analysis of Revenue and Operating Expenses is shown in the following Exhibits "A" through "E".

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT "A"
JUNE 30, 1978

ASSETS AND OTHER DEBITS

UTILITY PLANT			
Water Plant in Service		$246,180,652.00	
Less Reserve for Depreciation		80,408,385.39	$165,772,266.61
Construction Work in Progress:			
Water Department		1,629,413.14	
1961 Bond Fund		562,128.20	
1972 Bond Fund		1,468,948.61	3,660,489.95
TOTAL AND ACCRUED ASSETS			169,432,756.56
CURRENT AND ACCRUED ASSETS			
Casb (See Schedule 1)		$ 16,173,007.44	
Accounts Receivable (See Schedule 2)	$ 3,195,327.62		
Less Reserve for Uncollectible Accounts	75,477.40	3,119,850.22	
Notes Receivable		2,743.36	
Interfund Accounts Receivable (See Schedule 3)		586,567.67	
Materials and Supplies		1,213,343.29	
TOTAL CURRENT AND ACCRUED ASSETS			21,095,511.98
DEFERRED DEBITS			
Work in Progress		166,610.08	
Suspense Debits (See Schedule 4)		673,401.88	
Encumbrances (Contra)			
Budget Allocations to Other Depts. (See Schedule 10)			
TOTAL DEFERRED DEBITS			840,011.96
TOTAL ASSETS AND OTHER DEBITS			$191,368,280.50

LIABILITIES AND OTHER CREDITS

LONG TERM DEBT		
Bonds (See Schedule 5)		$38,298,140.00
CURRENT AND ACCRUED LIABILITIES		
Customers' Deposits	$ 100,490.07	
Accounts Payable (See Schedule 6)	1,308,400.90	
Interfund Accounts Payable (See Schedule 7)	845,465.06	
Matured Long-Term Debt-1928 Bond	3,000.00	
Matured Interest - 1972 Bond	18,303.75	
Interest Accrued - 1928 Bond		
Interest Accrued - 1961 Bond	219,478.47	
Interest Accrued - 1972 Bond	109,881.56	
TOTAL CURRENT AND ACCRUED LIABILITES		2,605,024.91
DEFERRED CREDITS		
Clearing Accounts	$ 24,970.18	
Suspense Credits	47,353.25	
Advance for Construction	108,194.62	
Orders for Work - Cash Advances	181,139.45	
Orders for Work - Accounts Receivable		
Orders for Work - Stock Manufacture		
Rental Deposits and Payments made in advance	48,463.50	
Utility Tax Billed	104.14	
Sewer Service Charges Billed	(5,946.08)	
Industrial Waste Fee Billed		
TOTAL DEFERRED CREDITS		404,279.06
RESERVES		
Injuries and Damage Reserves	$ 550,000.00	
Reserve for Refunds:		
Funded		
Unfunded		
Reserve for Contractors' Damage Claims	14,833.55	
Reserve for Encumbrances (Contra)		
TOTAL RESERVES		564,833.55
CONTRIBUTIONS IN AID OF CONSTRUCTION		
NET CAPITAL INVESTMENT (See details on Sheet 2)		149,404,002.98
TOTAL LIABILITIES AND OTHER CREDITS		$191,368,280.50

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT "B"
JUNE 30, 1978

	1972 M.W.S. BOND FUND	1961 M.W.S. BOND FUND	SAN FRANCISCO WATER DEPARTMENT	TOTAL
NET CAPITAL INVESTMENT - JUNE 30, 1977	$ 6,811,902.80	$ 42,723.31	$142,347,788.79	$149,202,414.90
ADD: Adjustment of Prior Years Surplus			37,310.94	37,310.94
Bond Sold (Series "C")	6,000,000.00			6,000,000.00
Net Income for 12 months ending June 30, 1978			256,277.14	256,277.14
Completed Contracts Capitalized	338,348.71		137,528.99	475,877.70
Equipment Transfer			41,116.17	41,116.17
Interest Capitalized by Bond Fund			1,187,017.79	1,187,017.79
Interest on Construction Work in Progress				
Transfer to Completed Contracts				
Contribution from 1961 Bond Fund				
	$13,150,251.51	$ 42,723.31	$144,007,039.82	$157,200,014.64
DEDUCT: Book Value of Plant Appraisal - June 30, 1968			$ 1,566,482.67	$ 1,566,482.67
Interest Capitalized by Bond Fund			6,000,000.00	6,000,000.00
Bonds Sold (Series "C")				
Completed Contracts Capitalized	137,436.42	92.57		137,528.99
Equipment Transfer				
Cancellation of Capitalizing Contract - Shown Above				
Allocated to General Fund				
Prepaid Interest				
NET CAPITAL INVESTMENT - JUNE 30, 1978	$13,012,815.09	$ 42,630.74	$ 136,440,557.15	$ 149,496,002.98

COMPOSITION OF NET CAPITAL INVESTMENT

INITIAL CAPITAL INVESTMENT - MARCH 3, 1930			
Amortization of Allocations (Spring Valley)	$4,152,652.24		
Valuation of Municipal Water Works	100,000.00		
	$4,252,652.24		
LESS: Additional Allowance for Depreciation - March 1, 1920 to March 3, 1930	2,327,916.67	$ 1,924,735.57	
Additions:			
Net Income - March 3, 1930 to June 30, 1978	$159,194,027.65		
Miscellaneous and year to year adjustments	5,966,774.76		
Allocations from Hetch Hetchy Power Division	409,471.41		
Allocations from 1947 Hetch Hetchy Water Bond Fund	290,516.71	165,860,700.53	
Grant earned on Federal Public Works Project		2,358,937.60	
Book Value of Plant Appraisal - June 30, 1948		83,864.03	
Contribution from 1961 Bond Fund		5,464,000.00	$175,692,377.73
DEDUCTIONS:			
Allocated to General Fund		$19,172,457.24	
Allocated to Hetch Hetchy Water Supply		4,466,014.40	
Lands Allocated to City and County of San Francisco for Streets and/or Blvds.		172,564.67	
Excess of adjusted book value of plant appraisal, December 31, 1937	1,990,474.91		
Excess of adjusted book value of plant appraisal, June 30, 1953	188,291.42		
Book Value of Plant Appraisal, June 30, 1958	89,383.93		
Book Value of Plant Appraisal, June 30, 1963	91,365.18		
Book Value of Plant Appraisal, June 30, 1968	25,823.00	2,385,338.44	26,196,378.75
NET CAPITAL INVESTMENT JUNE 30, 1978			$149,496,002.98

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT
EXHIBIT "C"
COMPARATIVE INCOME STATEMENT
TWELVE MONTH ENDING JUNE 30, 1978

TITLE		FISCAL YEAR 1977 - 1978	FISCAL YEAR 1976 - 1977	1977-1978 INCREASE (DECREASE)	MARCH 03, 1930 TO JUNE 30, 1978
OPERATING INCOME					
Sale of Water		$33,112,725.30	$30,409,760.28	$2,702,965.02	$726,857,380.08
OPERATING REVENUE DEDUCTIONS					
Operating Expenses		$20,536,649.51	$17,255,969.83	$3,280,679.68	$292,656,294.05
Purchase of Water		7,175,000.00	8,000,000.00	(825,000.00)	147,021,061.92
Depreciation		3,899,433.62	3,883,096.00	16,337.62	78,105,606.08
Taxes - Actual		1,734,197.28	1,742,156.06	(7,958.78)	36,498,184.76
TOTAL OPERATING REVENUE DEDUCTIONS		$33,345,280.41	$30,881,221.89	$2,464,058.52	$554,282,146.81
UTILITY OPERATING INCOME		$ (232,555.11)	$ (471,461.61)	$ 238,906.50	$172,575,233.27
OTHER INCOME		1,787,325.73	1,619,686.71	167,639.02	45,904,333.85
GROSS		$ 1,554,770.62	$ 1,148,225.10	$ 406,545.52	$218,479,567.12
INCOME DEDUCTIONS		1,298,493.48	1,020,495.11	277,998.37	59,285,530.47
INCOME TRANSFERRED TO NET CAPITAL INVESTMENT		$ 256,277.14	$ 127,729.99	$ 128,547.15	$159,194,027.65
Income from Grants	$ 71,573.00				
Rents - Including Share Crops	766,305.25				
Contractors' Damage Claims	15,912.70				
Interest Revenue	199,198.24				
Turn-on Fees	6,985.00				
Fixed Asset Sales	455,940.13				
Miscellaneous	250,492.11				
Walnut Orchard	20,919.30				
TOTAL OTHER INCOME	$1,787,325.73				
Non-Operating Revenue Deductions	$ 150,298.27				
Interest on Long-Term Debt	1,148,195.21				
TOTAL INCOME DEDUCTIONS	$1,298,493.48				

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT "E"
COMPARATIVE INCOME STATEMENT
JUNE 30, 1978

TITLE		FISCAL YEAR 1977 - 1978	FISCAL YEAR 1976 - 1977	1977 - 1978 INCREASE (DECREASE)	MARCH 3, 1930 TO JUNE 30, 1978
OPERATING INCOME					
SALE OF WATER:					
Water Sales - San Francisco		$ 15,250,218.52	$13,765,829.67	$1,484,388.85	
Water Sales - Outside San Francisco		14,904,977.80	14,762,152.92	142,824.88	
Water Sales - Municipal Departments -		140,371.39	124,030.95	16,340.44	
Water Sales - Municipal Departments -		2,817,157.59	1,757,746.74	1,059,410.85	
TOTAL WATER SALES		$ 33,112,725.30	$30,409,760.28	$2,702,965.02	$726,857,350.06
OPERATING REVENUE DEDUCTIONS					
SOURCE OF SUPPLY:					
Operation, Supervision and Engineering	701	$ 22,307.35	$ 28,092.09	$ (5,784.74)	
Operation, Labor and Expense	702	992,989.28	907,057.67	85,931.61	
Miscellaneous Expenses	703	1,297.85	138.71	1,159.14	
Purchased Water	704	597,961.20	-0-	597,961.20	
Maintenance Supervision and Engineering	706	1,090.73	6,603.92	(5,513.19)	
Maintenance of Structure and Improvements	707	133,581.58	86,037.45	47,544.13	
Maintenance of Collection and Impounding Reservoirs	708	410,060.70	681,038.81	(270,978.11)	
Maintenance of Lake, River and Other Intakes	709	3,458.14	3,848.87	(390.73)	
Maintenance of Springs and Tunnels	710	704.12	933.91	(229.79)	
Maintenance of Wells	711	640.88	372.87	268.01	
Maintenance of Supply Mains	712	97,959.62	76,415.59	21,544.03	
Maintenance of Other source of Supply Plant	713	-0-	-0-	-0-	
Hydrography	718	226.83	-0-	226.83	
TOTAL SOURCE OF SUPPLY EXPENSES		$2,262,278.28	$ 1,790,539.89	$ 471,738.39	$ 32,029,216.57
PUMPING EXPENSES					
Pumping Labor and Expenses	724	$ 489,409.50	$ 385,621.67	$ 103,787.83	
Miscellaneous Supplies and Expenses	725	8,174.28	4,364.08	3,810.20	
Fuel or Power Purchased for Pumping	726	307,630.04	269,768.13	37,861.91	
Maintenance, Supervision and Engineering	729	2,631.33	7,198.38	(4,567.05)	
Maintenance, of Structures and Improvements	730	15,128.45	14,235.55	892.90	
Maintenance of Primary Pumping Equipment	731	38.18	26.22	11.96	
Maintenance of Pumping Equipment	732	134,947.32	146,232.91	(11,285.59)	
Gardening	734	3,731.14	4,318.82	(587.68)	
TOTAL PUMPING EXPENSES		$ 961,690.24	$ 831,765.76	$ 129,924.48	$ 18,636,551.37
PURIFICATION EXPENSE ACCOUNTS					
Operation, Supervision and Engineering	741	$ 151,190.90	$ 91,011.10	$ 60,179.80	
Operation, Labor, and Expenses	742	981,986.01	907,554.08	74,431.93	
Miscellaneous Expenses	743	174.40	493.02	(318.62)	
Supplies and Expenses	744	602,971.52	483,925.48	119,046.04	
Maintenance, Supervision and Engineering	746	5,465.89	4,724.04	741.85	
Maintenance of Structures and Improvements	747	63,323.81	62,990.61	333.20	
Maintenance of Water Treatment Equipment	748	10,660.76	27,381.94	(16,721.18)	
TOTAL PURIFICATION EXPENSES		$1,815,773.29	$ 1,578,080.27	$ 237,693.02	$ 10,018,500.52

F I N A L

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT "E" (CONT'D)
COMPARATIVE INCOME SATEMENT
JUNE 30, 1978

T I T L E		FISCAL YEAR 1977-1978	FISCAL YEAR 1976 - 1977	1976 - 1977 INCREASE (DECREASE)	MARCH 3, 1930 TO JUNE 30, 1978
OPERATING REVENUE DEDUCTIONS (CONT'D.)					
MISCELLANEOUS EXPENSES					
Uncollectible Water Bills	814	$ 84,162.66	$ 42,233.72	$ 41,928.94	
Provision for Contingent Funds	815	-0-	-0-	-0-	
Undistributed Operating	817	732,343.65	-0-	732,343.65	
TOTAL MISCELLANEOUS EXPENSES		$816,506.31	$ 42,233.72	$774,272.59	$ 2,518,985.58
TOTAL OPERATING REVENUE DEDUCTIONS		$20,536,649.51	$17,255,969.83	$3,280,679.68	$292,656,294.05
OPERATING EXPENSES					
Purchase of Water	502.1	$ 7,175,000.00	$ 8,000,000.00	$ (825,000.00)	
Depreciation	503	3,899,433.62	3,883,096.00	16,337.62	
Taxes-Actual	507	1,734,197.28	1,742,156.06	(7,958.78)	
TOTAL OPERATING EXPENSES		$12,808,630.90	$13,625,252.06	$ (816,621.16)	$261,625,852.76
TOTAL OPERATING REVENUE DEDUCTIONS & OPERATING EXPENSES		$33,345,280.41	$30,881,221.89	$2,464,058.52	$554,282,146.81
UTILITY OPERATING INCOME		$ (232,555.11)	$ (471,461.61)	$ 238,906.50	$172,575,233.27
OTHER INCOME					
Rentals, including Crops Shares	521	$ 763,340.01	$ 1,091,134.25	$ (327,794.24)	
Walnut Orchard Sales	526	20,919.30	12,530.04	8,389.26	
Miscellaneous	526	347,928.05	304,873.07	43.054.98	
Interest Earned	524	199,198.24	160,103.10	39,095.14	
Sales of Real Estate and Fixed Assets	526	455,940.13	51,046.25	404,893.88	
TOTAL OTHER INCOME		$ 1,787,325.73	$ 1,619,686.71	$ 167,639.02	$ 45,904,333.85
GROSS INCOME		$ 1,554,770.62	$ 1,148,225.10	$ 406,545.52	$218,479,567.12
INCOME DEDUCTIONS					
Agricultural Division	850-854	$ 150,298.27	$ 132,505.49	$ 17,792.78	
Interest on Long-Term Debt	530	1,148,195.21	887,989.62	260,205.59	
TOTAL INCOME DEDUCTIONS		$ 1,298,493.48	$ 1,020,495.11	$ 277,998.37	$ 59,285,539.47
NET INCOME TRANSFERRED TO NET CAPITAL INVESTMENT		$ 256,277.14	$ 127,729.99	$ 128,547.15	$159,104,027.65

BOND REDEMPTION AND INTEREST

WATER DEPARTMENT

FISCAL YEAR	REDEMPTION			INTEREST			TOTAL REDEMPTION PLUS INTEREST
	MUNI WATER		SYSTEM TOTAL	MUNI WATER		SYSTEM TOTAL	
	1961	1972		1961	1972		
1977-78	$ 2,694,801	$ 695,000	$ 3,389,801	$ 808,353	$ 712,430	$ 1,520,783	$ 4,910,584
1978-79	2,691,370	695,000	3,386,370	717,797	972,330	1,690,127	5,076,497
1979-80	2,691,374	845,000	3,536,374	627,064	925,405	1,552,469	5,088,843
1980-81	2,691,370	845,000	3,536,370	536,012	874,980	1,410,992	4,947,362
1981-82	2,691,374	845,000	3,536,374	444,737	824,555	1,269,292	4,805,666
1982-83	2,451,375	845,000	3,296,375	352,868	774,130	1,126,998	4,423,373
1983-84	1,563,397	845,000	2,408,397	268,066	723,705	991,771	3,400,168
1984-85	1,563,396	845,000	2,408,396	208,524	673,280	881,804	3,290,200
1985-86	1,477,686	845,000	2,322,686	149,899	623,605	773,504	3,096,190
1986-87	1,196,546	845,000	2,041,546	106,612	576,600	683,212	2,724,758
1987-88	586,561	845,000	1,431,561	79,394	528,845	608,239	4,039,800
1988-89	390,848	845,000	1,235,848	52,665	480,645	533,310	1,769,158
1989-90	267,423	870,000	1,137,423	34,124	432,320	466,444	1,603,867
1990-91	267,423	995,000	1,262,423	21,130	380,425	401,555	1,663,978
1991-92	119,998	1,030,000	1,149,998	8,136	324,225	332,361	1,482,359
1992-93	47,999	1,060,000	1,107,999	2,448	265,770	268,218	1,376,217
1993-94	-0-	850,000	850,000	-0-	211,390	211,390	1,061,390
1994-95	-0-	1,015,000	1,015,000	-0-	157,408	157,408	1,172,408
1995-96	-0-	605,000	605,000	-0-	104,619	104,619	709,619
1996-97	-0-	635,000	635,000	-0-	72,069	72,069	707,069
1997-98	-0-	675,000	675,000	-0-	41,900	41,900	716,900
1998-99	-0-	710,000	710,000	-0-	14,200	14,200	724,200
	$23,392,941	$18,285,000	$41,677,941	$ 4,417,829	$10,694,836	$15,112,665	$56,790,606

ORIGINAL AMOUNT AND INTEREST RATE

$47,999,000	19,925,000
2-1/4 to 6%	4% to 6.5%

MISCELLANEOUS STATISTICS

BACTERIOLOGICAL ANALYSES
ANNUAL SUMMARY OF RESULTS
RAW WATERS - SOURCES AND RESERVOIRS

1977 - 1978

Origin of Samples	Agar Count No. Per Ml.			Coliform Group 10 ml. portions			Samples		
	Min.	Max.	Median	No. Exam.	No. Pos.	% Pos.	No. Exam.	No. Pos.	% Pos.
Moccasin Reservoir	180	>5000	395	140	119	85.0	28	24	85.7
Tesla Portal	1	95	22	250	92	36.8	50	15	30.0
Calaveras Reservoir	25	1930	250	255	173	67.8	51	36	70.6
Calaveras Outlet	5	>5000	390	260	79	30.4	52	16	30.8
Sunol Filters	9	1700	80	260	215	74.1	52	48	92.3
Pleasanton Well Field	1	510	10	255	4	1.6	51	0	0
Pleasanton Town Well	1	960	125	260	0	0	52	0	0
San Antonio Reservoir	38	2200	290	255	210	82.3	51	46	90.2
San Antonio Outlet	1	>5000	98	255	102	40.0	51	20	39.2
Upper C. S. Reservoir	42	3000	180	260	188	72.3	52	38	73.1
Lower C. S. Reservoir	85	>5000	210	260	117	45.0	52	23	44.2
Lower C. S. Outlet	20	525	225	1695	680	40.1	339	127	37.5
San Andreas Reservoir	10	450	80	250	117	46.8	50	25	50.0
San Andreas Outlet	7	>5000	150	1625	638	39.3	325	112	34.5
Pilarcitos Surface	15	3500	110	255	146	57.2	51	30	58.8
Hunters Point Reservoir	1	480	1	485	0	0	97	0	0
Stone Dam Surf.	100	>5000	280	245	238	97.1	49	47	95.9
Stone Dam Outlet	110	1130	300	245	235	95.9	49	48	97.9
				MPN					
				Min.	Max.	Median			
Lake Merced North	25	3860	280	11	16000	260	51	50	98.0
Lake Merced South +	45	3860	280	2	790	33	51	42	82.4
Laguna Creek	790	>5000	>5000	130	>24000	>24000	51	51	100.0
Alameda Creek	320	>5000	1700	14	>24000	1700	33	33	100.0

+ Emergency Standby Source
MPN: Most Probable Number of Coliform Organisms per 100 Milliters

BACTERIOLOGICAL ANALYSES
ANNUAL SUMMARY OF RESULTS

1977 - 1980

Origin of Samples	Agar Count No. Per Ml.			Coliform Group 10 ml. portions			Samples		
	Min.	Max.	Median	No. Exam.	No. Pos.	% Pos.	No. Exam.	No. Pos.	% Pos.
Distribution Reservoir with chlorination facilities									
Lombard Reservoir	1	13	1	485	0	0	97	0	0
Univ. Md. Res. #1	1	850	12	505	70	13.9	101	9	8.9
Univ. Md. Res. #2	1	225	1	470	14	3.0	94	2	2.1
College Hill Reservoir	1	11	1	520	0	0	104	0	0
Sunset Reservoir #1	1	390	1	520	25	4.8	104	4	3.8
Sunset Reservoir #2	1	570	1	520	119	22.9	104	25	24.0
Merced Manor Res.	1	65	1	520	0	0	104	0	0
Stanford Hts. Res.	1	170	1	520	24	4.6	104	2	1.9
Sutro Reservoir	1	1400	6	520	82	15.8	104	13	12.5
Summit Reservoir	1	160	10	520	201	38.6	104	41	39.4
Francisco Reservoir	(NOT IN SERVICE)								
Potrero Hts. Reservoir	1	225	1	520	5	1.0	104	1	1.0
McLaren Tank	1	>5000	1	520	5	1.0	104	1	1.0
Niles Reservoir	1	>5000	60	260	11	4.2	52	1	1.9
Pulgas	1	2250	175	1930	429	22.2	386	82	21.2
TREATED WATER									
Alameda East	1	200	1	250	0	0	50	0	0
Calaveras Pipeline	1	160	650	245	80	32.6	49	10	20.4
San Antonio Pipeline	1	>5000	310	260	87	33.4	52	17	32.7
Sunol F. P. Outlet	1	1700	1	145	0	0	29	0	0
Sunol Town Supply	1	90	1	515	0	0	103	0	0
Sunol Aqueduct	1	105	1	255	0	0	51	0	0
Irvington Meter N° & S°	1	140	1	255	0	0	51	0	0
Bay Cross. Pipeline #1	1	580	1	1305	25	1.9	261	4	1.5
Bay Cross. Pipeline #2	1	510	9	1300	2	0.2	260	0	0
Bay Cross. Pipeline #3	1	560	1	1300	2	0.2	260	0	0
Bay Cross. Pipeline #4	1	510	1	1300	2	0.2	260	0	0
Palo Alto Pipeline	1	550	1	770	0	0	154	0	0
S.S.L. Casey Quarry	1	450	1	1620	6	0.4	324	1	0.3
C.S. #2 Casey Quarry	1	450	1	1625	16	1.0	325	3	0.9

S.F. Airport North	1	10	1	1300	39	3.0	260	4	1.5
S.F. Airport South	1	510	12	1295	16		259	3	1.2
C.S. Pipeline #1									
C.S. Pipeline #2	1	450	1	1620	23	1.4	324	5	1.5
San Andreas #2 Inlet									
San Andreas #3 Inlet									
San And. F.P. #1 Out.									
San And. F. P. #2 Out.	1	500	1	1625	1	0.1	325	0	0
S.S.L. at Millbrae	1	560	1	1625	20	1.2	325	3	0.9
San Andreas #2 Baden	1	390	1	1305	0	0	261	0	0
Hunters Point Inlet	1	850	1	455	11	2.4	91	2	2.2
Hunters Point Outlet	1	420	1	485	0	0	97	0	0
Hunters Point System	1	2500	1	505	2	0.4	101	0	0
Univ. Md. Inlet #2	1	240	1	520	2	0.4	104	0	0
Univ. Md Outlet #1	1	680	1	510	0	0	102	0	0
Univ. Md. Outlet #2	1	500	1	510	0	0	102	0	0
Univ. Md. System #1	1	5000	16	510	0	0	102	0	0
Univ. Md. System #2	1	850	1	505	4	0.8	101	1	1.0
Univ. Md. System #3	1	250	1	510	0	0	102	0	0
Univ. Md. System #4	1	680	16	510	17	3.3	102	3	2.9
Univ. Md. System #5	1	225	17	495	0	0	99	0	0
Univ. Md. System #4	1	1300	1	520	15	2.9	104	3	2.9
Univ. Md. System #7	1	280	1	520	0	0	104	0	0
Univ. Md. System #8	1	625	1	510	1	0.2	102	0	0
College Hill Inlet	1	1	1	515	0	0	103	0	0
College Hill Outlet	1	50	1	520	0	0	104	0	0
College Hill System #1	1	680	1	520	6	1.2	104	1	1.0
College Hill System #2	1	680	1	515	0	0	103	0	0
Sunset Inlet #1	1	150	1	520	4	0.8	104	1	1.0
Sunset Outlet #1	1	16	1	510	0	0	102	0	0
Sunset Outlet #2	1	5	1	520	3	0.2	104	0	0
Sunset System #1	1	14	1	495	0	0	99	0	0
Sunset System #2	1	340	1	520	3	0.2	104	0	0
Sunset System #3	1	500	1	515	3	0.6	103	1	1.0
Sunset System #4	1	280	1	520	6	1.2	104	1	1.0

Sunset System #5	1	40	1	520	1	0.2	104	0	0
Sunset System #6	1	89	1	520	0	0	104	0	0
Sunset System #7	1	155	1	500	0	0	100	0	0
Sunset System #8	1	60	12	485	3	0.6	97	1	1.0
Sunset System #9	1	390	1	520	8	1.5	104	2	1.9
Potrero Hts. Tank	1	680	1	520	1	0.2	104	0	0
Potrero Hts. Res. Out.	1	1900	1	515	6	1.2	103	1	1.0
Potrero Hts. System	1	>5000	1	520	7	1.3	104	1	1.0
Lombard System	1	1100	1	505	9	1.8	101	2	2.0
Merced Manor Sys. #1	1	31	1	520	5	1.0	104	1	1.0
Merced Manor Sys. #2	1	910	1	515	6	1.2	103	1	1.0
Stanford Hts. Inlet	1	1	1	520	1	0.2	104	0	0
Stanford Hts. Outlet	1	310	1	510	5	1.0	102	1	1.0
Stanford Hts. Sys. #1	1	17	1	520	0	0	104	0	0
Stanford Hts. Sys. #2	1	20	1	510	0	0	102	0	0
Stanford Hts. Sys. #3	1	60	1	480	0	0	96	0	0
Sutro Outlet	1	1400	1	400	5	1.2	80	1	1.2
Sutro System #1	1	70	1	515	0	0	103	0	0
Sutro System #2	1	2500	1	520	10	1.9	104	2	1.9
Sutro System #3	1	1400	1	510	1	0.2	102	0	0
Sutro System #4	1	225	1	520	5	1.0	104	1	1.0
McLaren System #1	1	>5000	1	510	11	2.2	102	2	2.0
McLaren System #2	1	>5000	1	515	5	1.0	103	1	1.0
Summit Outlet	1	400	1	515	4	0.8	103	1	1.0
Summit System	1	170	1	520	14	2.7	104	3	2.9

MONTHLY SUMMARIES OF BACTERIOLOGICAL ANALYSES
SAMPLES COLLECTED FROM THE SAN FRANCISCO DISTRIBUTION SYSTEM
IN ACCORDANCE WITH CERTIFICATION REQUIREMENTS

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	COLIFORM					
	SAMPLES POSITIVE (3 or more tubes)			TUBES POSITIVE (10 ml. portions)		
	No. of Samples	Number Positive	Per Cent Positive	No. of Tubes	Tubes Positive	Per Cent Positive
1977						
July	542	6	1.1	2170	40	1.5
August	602	0	0	3010	5	0.17
September	600	2	0.3	3000	12	0.4
October	593	0	0	2965	3	0.1
November	541	1	0.2	2705	10	0.4
December	592	3	0.5	2960	15	0.5
1978						
January	589	0	0	2945	0	0
February	503	0	0	2515	0	0
March	597	0	0	2985	0	0
April	545	1	0.2	2725	3	0.1
May	680	36	5.3	3400	187	5.5
June	592	0	0	2960	0	0

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE I

Source	A Hetch Hetchy Reservoir (Surface)	B Alameda East Portal (Treated Water)
Date Sampled	April 30, 1978	April 21, 1978
CHEMICAL CONSTITUENTS		
Cations (+)		
Aluminum	0.04	0.04
Arsenic	<0.01	<0.01
Barium	<0.25	<0.25
Boron	0.03	0.04
Cadmium	<0.002	<0.002
Calcium	1.6	6.1
Chromium	< .005	< .005
Copper	0.007	0.000
Iron	0.06	0.07
Lead	<0.02	<0.02
Magnesium	0.15	0.45
Manganese	0.007	<0.005
Mercury	<0.0005	<0.0005
Potassium	0.37	0.5
Selenium	<0.0025	<0.0025
Silver	<0.005	<0.005
Sodium	0.9	3.5
Zinc	0.007	0.006
Anions (-)		
Bicarbonate	9.2	18.3
Carbonate	0.0	0.6
Chloride	0.0	5.1
Fluoride	0.02	<0.01
Hydroxide	0.0	0.0
Nitrate	<0.1	0.1
Nitrite	<0.003	<0.003
Phosphate	0.01	<0.01
Sulfate	0.0	3.9
*Nonionics		
Total Apparent ABS	<0.05	<0.05
Free Ammonia (NH_3)	<0.05	<0.05
Dissolved Oxygen (O_2)	10.3	12.1
Silica (SiO_2)	6.4	6.8
Derived Values		
Hardness as $CaCO_3$	4.6	17.1
Alkalinity as $CaCO_3$	7.5	16.0
Total Residual @ 103°C - 105°C	17	39
Physical Measurements		
Conductivity (μmhos/CM)	18	57
pH	7.0	8.9
Turbidity (Units)	0.50	0.40
Color (Units)	5	0

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE II

Source	C Calaveras Pipeline (Surface)	D San Antonio Pipeline (Filtered)
Date Sampled	April 21, 1978	April 21, 1978
CHEMICAL CONSTITUENTS		
Cations (+)		
Aluminum	0.07	0.06
Arsenic	<0.01	<0.01
Barium	<0.25	<0.25
Boron	0.13	0.17
Cadmium	<0.002	<0.002
Calcium	27.6	23.4
Chromium	< .005	< .005
Copper	0.06	0.01
Iron	0.25	0.14
Lead	<0.02	<0.02
Magnesium	7.3	8.6
Manganese	<0.005	<0.005
Mercury	<0.0005	<0.0005
Potassium	1.9	2.4
Selenium	<0.0025	<0.0025
Silver	<0.005	<0.005
Sodium	9.6	30.0
Zinc	0.003	0.009
Anions (-)		
Bicarbonate	106.5	86.6
Carbonate	0.0	0.0
Chloride	10.5	52.1
Fluoride	0.15	0.12
Hydroxide	0.0	0.0
Nitrate	2.4	2.9
Nitrite	0.003	<0.003
Phosphate	0.08	0.25
Sulfate	18.0	22.0
Nonionics		
Total Apparent ABS	<0.05	<0.05
Free Ammonia (NH_3)	<0.05	<0.05
Dissolved Oxygen (O_2)	10.1	5.9
Silica (SiO_2)	10.5	7.0
Derived Values		
Hardness as $CaCO_3$	99.0	94.0
Alkalinity as $CaCO_3$	87.3	71.0
Total Residual @ 103°C - 105°C	155	204
Physical Measurements		
Conductivity (μmhos/CM)	252	368
pH	7.9	7.7
Turbidity (Units)	6.4	3.2
Color (Units)	20	10

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE IV

	G	H
Source	Pilarcitos Reservoir (Surface)	Stone Dam (Surface)
Date Sampled	April 20, 1978	April 20, 1978
CHEMICAL CONSTITUENTS		
Cations (+)		
Aluminum	0.06	0.06
Arsenic	<0.01	<0.01
Barium	<0.25	<0.25
Boron	0.04	0.04
Cadmium	<0.002	<0.002
Calcium	17.1	33.9
Chromium	< .005	< .005
Copper	0.04	0.000
Iron	0.18	0.18
Lead	<0.02	<0.02
Magnesium	4.4	9.0
Manganese	<0.005	<0.005
Mercury	<0.0005	<0.0005
Potassium	0.6	1.2
Selenium	<0.0025	<0.0025
Silver	<0.005	<0.005
Sodium	13.9	18.3
Zinc	0.003	0.005
Anions (-)		
Bicarbonate	64.8	129.0
Carbonate	0.0	0.0
Chloride	24.2	30.1
Fluoride	0.02	0.10
Hydroxide	0.0	0.0
Nitrate	<0.1	2.4
Nitrite	<0.003	<0.003
Phosphate	<0.01	0.02
Sulfate	8.0	13.6
Nonionics		
Total Apparent ABS	<0.05	<0.05
Free Ammonia (NH_3)	<0.05	<0.05
Dissolved Oxygen (O_2)	9.9	10.1
Silica (SiO_2)	12.9	19.6
Derived Values		
Hardness as $CaCO_3$	60.6	121.8
Alkalinity as $CoCO_3$	53.1	105.7
Total Residual @ 103°C - 105°C	117	193
Physical Measurements		
Conductivity (µmhos/CM)	204	346
pH	8.1	8.0
Turbidity (Units)	3.4	2.3
Color (Units)	17	5

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE V

Source	I Lake Merced Reservoir (Surfoce)	J Sunol Filters
Date Sampled	April 20, 1978	April 21, 1978
CHEMICAL CONSTITUENTS		
Cations (+)		
Aluminum	0.01	0.01
Arsenic	<0.01	<0.01
Barium	<0.25	<0.25
Boron	0.05	0.53
Cadmium	<0.002	<0.002
Calcium	30.4	59.4
Chromium	< .005	< .005
Copper	0.004	0.002
Iron	0.03	0.02
Leod	<0.02	<0.02
Mognesium	24.5	16.6
Monganese	<0.005	<0.005
Mercury	<0.0005	<0.0005
Potassium	2.3	1.9
Selenium	<0.0025	<0.0025
Silver	<0.005	<0.005
Sodium	52.0	25.1
Zinc	0.003	0.004
Anions (-)		
Bicorbonate	185	217.4
Carbonote	2.2	0.0
Chloride	73.2	25.7
Fluoride	0.42	0.2
Hydroxide	0.0	0.0
Nitrate	<0.1	5.0
Nitrite	<0.003	<0.003
Phosphate	0.05	0.06
Sulfate	28.9	56.6
Nonionics		
Total Apparent ABS	<0.05	<0.05
Free Ammonio (NH_3)	<0.05	<0.05
Dissolved Oxygen (O_2)	9.6	7.4
Silica (SiO_2)	30.0	14.1
Derived Values		
Hordness as $CoCO_3$	177	216.7
Alkolinity as $CaCO_3$	155	178.2
Total Residual @ 103°C - 105°C	358	324
Physical Measurements		
Conductivity (µmhos/CM)	608	541
pH	8.4	7.4
Turbidity (Units)	4.0	0.25
Color (Units)	10	0

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE VI

	K	L
Source	Pleasanton Well Field	Cherry Reservoir
Date Sampled	April 21, 1978	April 30, 1978
CHEMICAL CONSTITUENTS		
Cations (+)		
Aluminum	<0.01	0.11
Arsenic	<0.01	<0.01
Barium	<0.25	<0.25
Boron	0.27	0.03
Cadmium	<0.002	<0.002
Calcium	90.2	1.2
Chromium	< .005	< .005
Copper	0.001	0.000
Iron	0.03	0.11
Lead	<0.02	<0.02
Magnesium	38.0	0.16
Manganese	<0.005	<0.005
Mercury	<0.0005	<0.0005
Potassium	2.3	0.26
Selenium	0.004	<0.0025
Silver	<0.005	<0.005
Sodium	35.8	1.3
Zinc	0.003	0.003
Anions (-)		
Bicarbonate	358.0	7.5
Carbonate	0.0	0.0
Chloride	57.8	0.4
Fluoride	0.16	0.02
Hydroxide	0.0	0.0
Nitrate	11.8	<0.1
Nitrite	0.003	<0.003
Phosphate	0.08	0.01
Sulfate	70	0.0
Nonionics		
Total Apparent ABS	<0.05	<0.05
Free Ammonia (NH_3)	<0.05	<0.05
Dissolved Oxygen (O_2)	6.7	10.4
Silica (SiO_2)	20.2	4.8
Derived Values		
Hardness as $CaCO_3$	381.6	3.6
Alkalinity as $CaCO_3$	293.4	6.2
Total Residual @ 103°C - 105°C	494	13
Physical Measurements		
Conductivity (μmhos/CM)	877	12
pH	7.5	7.0
Turbidity (Units)	0.15	1.0
Color (Units)	0	5

LENGTH OF VARIOUS SIZES OF TRANSMISSION MAINS IN FEET

	28"	30"/33"*	36"	37"/39"*	42"	44"	48"	54"	57"	60"
Pleasanton		27,432								
Niles-Irvington						15,600				
Calaveras						30,570	1,045			
Bay Division #1					3,161s				6,821	102,131
Bay Division #2					250r			6,066s		
Bay Division #3										
Alameda Cr. Siphon										
Crystal Springs #1			123			84,821		358		4,948
Crystal Springs #2		669			100			16,757		84,317
C. S. Bypass Pipeline										75
Sunset & C. S. #3										17,549
Sunset Pipeline								337		46,030
San Andreas Branch of Sunset Pipeline										41
San Andreas #1			2,334		3,150	21,048				
San Andreas #2								64,781		
Baden-Merced		32,304	2,260	1,500						
San Andreas Outlet Conn. Pipes		5,024						869		1,739
Palo Alto			28,049							
Pilarcitos Aqueduct	7,480	169*	648			370				
Stone Dam Aqueduct		501		1,814*		2,106	2,894			
C.S. - S.A. Aqueduct		103				30				23,218
San Antonio								110		10,940
Sunol Pump		170	7,697							
TOTAL	7,480	66,372	41,111	3,314	6,661	154,905	3,939	89,278	6,821	290,988

s - submarine pipes

r - risers

(continued)

TABLE NO. 4

LENGTH OF VARIOUS SIZES OF TRANSMISSION MAINS IN FEET (cont'd)

	61"/62"*	66"/69"*	72"	76"*/78"	79"	84"	90/91"*	96"	Total Feet	Miles
Pleasanton									27,432	5.19
Niles-Irvington									15,600	2.95
Calaveras									31,615	5.99
Bay Division #1									112,113	21.23
Bay Division #2	26,094*	78,856		3,867*					115,133	21.81
Bay Division #3			132,828	45,092			1,188		179,108	33.92
Bay Division #4			672			42,588	90,469	44,966	178,695	33.84
Alameda Creek Siphon		2,942*	93				2,972	2,941	8,948	1.70
Crystal Springs #1									90,250	17.09
Crystal Springs #2				716					102,559	19.42
C. S. Bypass Pipeline								4,425	4,500	0.86
Sunset & C. S. #3	1,529			145	14,629		5,311		39,163	7.41
Sunset Pipeline	37,952								84,319	15.97
San Andreas Br. of Sunset Pipeline	5,978								6,019	1.14
San Andreas #1									26,532	5.04
San Andreas #2									64,781	12.26
Baden-Merced									36,064	6.83
San Andreas Outlet Conn. Pipes	873		1,276						9,781	1.85
Palo Alto									28,049	5.31
Pilarcitos Aqueduct									9,027	1.71
Stone Dam Aqueduct									7,315	1.39
C. S. & S. A. Aqueduct		356	820						24,527	4.66
San Antonio									11,050	2.09
Sunol Pump									7,867	1.49
Sunol Plant to Siphon				8,512					8,512	1.61
TOTALS	72,426	82,154	135,689	58,332	14,629	42,588	99,940	52,332	1,228,959	232.76

CLASS OF CONSUMERS	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	8"	10"	12"	TOTAL
REVENUE PRODUCING												
Commercial	12,950	1,710	3,985	3,181	5,647	376	556	649	475	6	3	29,538
Residential	114,096	10,897	3,291	548	135	-	-	-	-	-	-	128,967
Docks & Shipping	64	7	29	31	118	-	-	3	3	2	-	257
TOTAL	127,110	12,614	7,305	3,760	5,900	376	556	652	478	8	3	158,762
NON-REVENUE PRODUCING												
Commercial	1,085	42	92	75	121	17	17	15	4	-	-	1,468
Residential	947	46	12	1	-	-	-	-	-	-	-	1,006
Docks & Shipping	15	1	2	5	13	-	-	-	-	-	-	36
TOTAL	2,047	89	106	81	134	17	17	15	4	-	-	2,510
TOTALS												
Commercial	14,035	1,752	4,077	3,256	5,768	393	573	664	479	6	3	31,006
Residential	115,043	10,943	3,303	549	135	-	-	-	-	-	-	129,973
Docks & Shipping	79	8	31	36	131	-	-	3	3	2	-	293
TOTAL	129,157	12,703	7,411	3,841	6,034	393	573	667	482	8	3	161,272

Total meters in service as of June 30, 1978			161,272
Less: Extra meters in 1,174 Batteries (3,403-1,174)	2,229		
Extra meters in 9 consolidations (33-9)	24		
Non-Revenue Meters (Temporarily shut-off)	2,510		4,763
Number of active Accounts as of June 30, 1978			156,509

The above meter count includes 2,753 Fire Services.
At Docks & Shipping Office, portable meters used on hydrants as needed: 21 - 1½" and 29 - 2" meters.
On hydrants in use by Builders & Contractors: 60 - 1" and 44 - 2" meters

PREVIOUS RECORDS:

	1973-74	1974-75	1975-76	1976-77	1977-78
TOTAL METERS	162,332	162,357	162,089	160,714	161,272
Increase or Decrease	125	25	(268)	(1,375)	558
Idle Meters	2,779	2,445	2,386	2,428	2,510

CLASS OF CONSUMERS	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	8"	10"	12"	16"	TOTAL
REVENUE PRODUCING													
Regular Rates	363	37	37	19	126	1	19	87	108	38	5	7	847
Airport Use	5	7	14	10	45	-	4	11	17	3	2	-	118
Total	368	44	51	29	171	1	23	98	125	41	7	7	965
NON-REVENUE PRODUCING													
Regular Rates	5	0	0	0	0	0	0	2	0	1	0	0	8
Airport Use	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	0	0	0	0	0	0	2	0	1	0	0	8
TOTALS													
Regular Rates	368	37	37	19	126	1	19	89	108	39	5	7	855
Airport Use	5	7	14	10	45	0	4	11	17	3	2	0	118
	373	44	51	29	171	1	23	100	125	42	7	7	973

Total meters in service as of June 30, 1978.		973
Less extra meters in 96 Batteries and consolidations (418-96)	322	
Non-Revenue meters (Temporarily shut-off)	8	330
Number of active Suburban Accounts as of June 30, 1978		643
Number of Non-metered Accounts (Active Airport)		11
		654

PREVIOUS RECORDS	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Total Meters	943	963	949	953	967	973
Increase or Decrease	(2)	20	(14)	4	14	6
Idle Meters	21	16	10	15	15	8

TABLE NO. 5

PIPE RECORDS

CITY DISTRIBUTION SYSTEM

Size	Total Pipe In Ground June 30, 1977*	Pipe Laid 1977-78*	Removed or Abandoned 1977-78*	Total Pipe In Ground June 30, 1978*
WROUGHT IRON AND STEEL PIPE				
0 - 3/4"	9,047	0	0	9,047
1	29,760	0	0	29,760
1 - 1/4	3,398	0	0	3,398
1 - 1/2	121,511	0	342	121,169
2	108,899	2,708	948	110,659
3	439	19	0	458
4	3,886	2,287	0	6,173
6	1,825	2,621	155	4,291
8	566	575	0	1,141
12	7,316	4,484	150	11,650
13	456	0	0	456
16	19,801	833	0	20,634
18	4,185	2,985	0	7,170
20	87,496	0	676	86,820
22	22,321	0	0	22,321
23 - 1/2	1,187	0	0	1,187
24	78,193	435	159	78,469
30	47,622	634	0	48,256
33	2,409	0	0	2,409
36	56,616	1,590	1,110	57,096
37 - 1/2	8,896	0	0	8,896
44	22,266	0	0	22,266
48	12,820	0	0	12,820
60	26,216	0	0	26,216
TOTAL	677,131	19,171	3,540	692,762
DUCTILE IRON AND CAST IRON PIPE				
2"	22,211	0	0	22,211
3	40,907	0	120	40,787
4	480,858	507	7,339	474,026
6	2,105,455	2,684	5,441	2,102,698
8	1,764,656	3,736	3,840	1,764,912
10	3,287	0	0	3,287
12	616,564	6,196	4,296	618,464
16	387,081	95	4,158	383,018
20	22,609	0	0	22,609

TABLE NO. 5
PIPE RECORDS
CITY DISTRIBUTION SYSTEM - CONTINUED

Size	Total Pipe In Ground June 30, 1977*	Pipe Laid 1977-78*	Removed or Abandoned 1977-78*	Total Pipe In Ground June 30, 1978*
		DUCTILE IRON AND CAST IRON PIPE (CONT'D.)		
22"	12,198	0	0	12,198
24	60,093	0	0	60,093
30	4,397	0	0	4,397
TOTAL	5,520,316	13,218	24,834	5,508,700
		TRANSITE PIPE		
6"	16,982	0	0	16,982
8	24,514	0	0	24,514
TOTAL	41,496	0	0	41,496
		PLASTIC PIPE		
1"	326	70	70	326
2	190	0	0	190
TOTAL	516	70	70	516
TOTAL ALL PIPES	6,239,459	32,459	28,444	6,243,474
TOTAL MILES	1,178.72	6.15	5.39	1,182.48

*All numbers are in feet unless otherwise noted.

SERVICE CONNECTION RECORDS

SAN FRANCISCO DISTRICT JUNE 30, 1978

TAPS ON STREET MAINS

	Wharf	3/4"	1"	1½"	2"	3"	4"	6"	8"	10"	12"	16"	TOTAL
JUNE 30,1977	376	105,281	79,143	6,262	5,036	1,693	1,259	997	607	10	27	2	200,693
Add 1977-78	0	(2,481)	3,153	80	117	33	33	20	7	1	0	0	963
JUNE 30, 1978	376	102,800	82,296	6,342	5,153	1,726	1,292	1,017	614	11	27	2	201,656

SERVICE CONNECTIONS

Services Connected to street Mains (as above)	201,656
Distributors - Being one or more additional Connections to service pipe	436
Total connections of Record	202,092
Disconnected Services	43,073
Net metered Line services consisting 158,762 active meters, less 2,253	
Extra Meters in Batteries, plus 2,510 services temporarily Shut-off	159,019

PREVIOUS RECORDS	1974-75	1975-76	1976-77	1977-78
Active	159,912	159,703	158,286	158,762
Shut-Off	2,445	2,386	2,428	2,510
TOTALS	162,357	162,089	160,714	161,272
Less extra Battery Meters	2,824	2,681	2,249	2,253
Net	159,533	159,408	158,465	159,019

SERVICE INSTALLATIONS

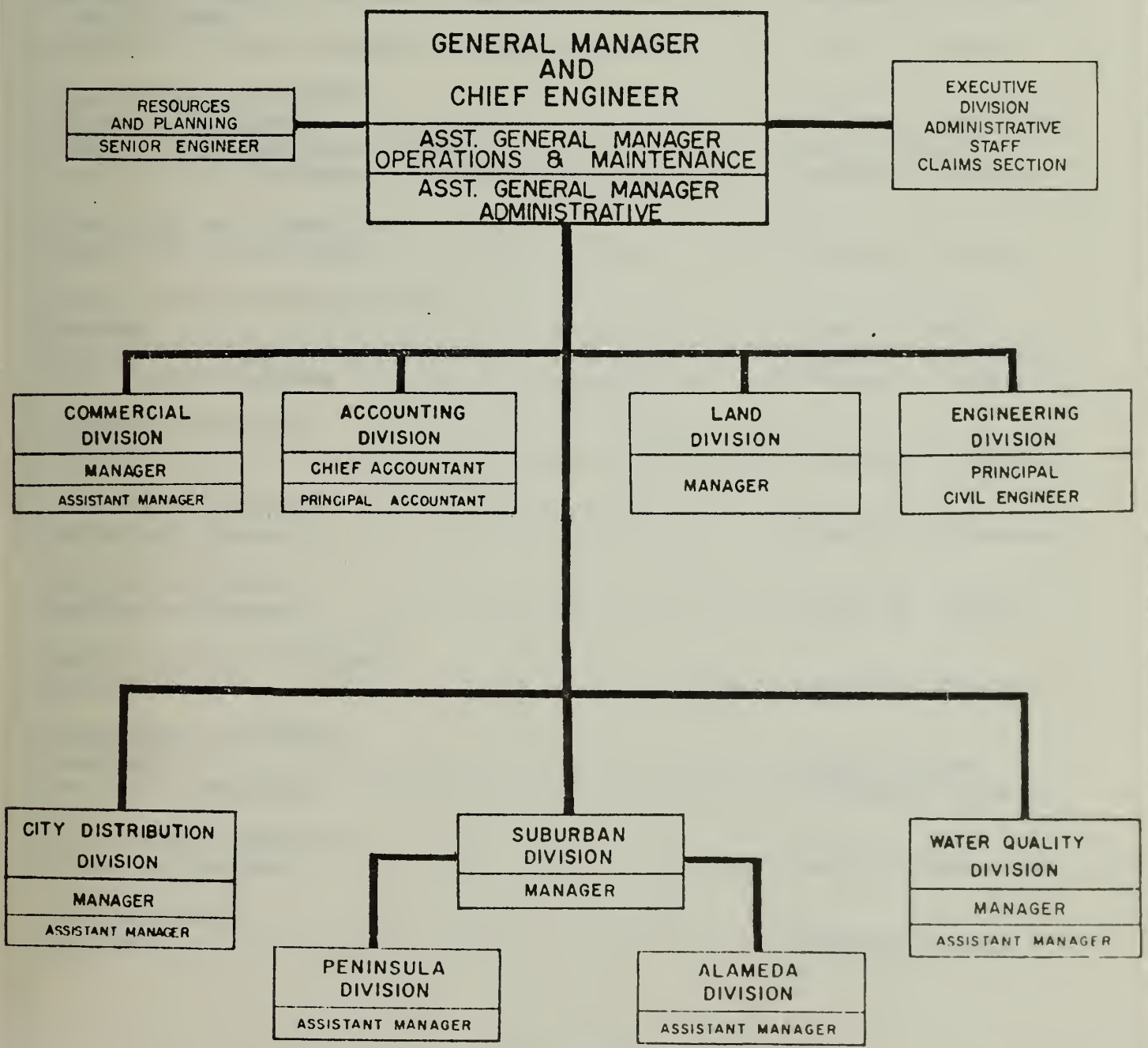
DISTRICT	FISCAL YEAR	DISTRIBUTORS	TOTALS
Richmond	47	0	47
Sunset	136	0	136
N/Market	219	0	219
S/Market	366	0	366
Waterfront	-	0	-
	771	0	771

PREVIOUS YEARS	FISCAL YEARS	DISTRIBUTORS	TOTALS
1974-75	538	0	538
1975-76	575	0	575
1976-77	713	0	713

ORGANIZATION AND PERSONNEL

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION

SAN FRANCISCO WATER DEPARTMENT ORGANIZATION CHART



PERSONNEL

General Manager	Kenneth R. Boyd
Assistant General Manager, Operations and Maintenance	Eugene J. Kelleher
Assistant General Manager, Administrative	Cyril J. Roche
ENGINEERING DIVISION	
Principal Engineer	Julian L. Bardoff
Senior Civil Engineer, Design	Ray F. Quan
Senior Civil Engineer, Construction	Donald P. Cooper
RESOURCES AND PLANNING	
Senior Civil Engineer	Thomas Q. Chan
CITY DISTRIBUTION DIVISION	
Manager	John E. Kenck
Assistant Manager	George Y. Nakagaki
Shop Superintendent	Edmund A. Brodie
SUBURBAN DIVISION	
Manager	Gilbert G. Bendix
PENINSULA DIVISION	
Assistant Manager	Edward L. Fonseca
ALAMEDA DIVISION	
Assistant Manager	Tandy W. Carter
WATER QUALITY DIVISION	
Manager	Harry W. Tracy
COMMERCIAL DIVISION	
Manager	John Mullane
Assistant Manager	Dorothy J. Disney
ACCOUNTING DIVISION	
Chief Accountant	Harold Guetersloh, Jr.
LAND DIVISION	
Manager	Richard Tanaka

NUMBER OF EMPLOYEES

Permanent	564
Temporary	41

RETIRED EMPLOYEES

AND

IN MEMORIAM

R E T I R E D

July 1, 1977 through June 30, 1978

During the fiscal year, the following employees were retired from services and recognition is given to their faithful services in the organization:

EMPLOYEE		CLASSIFICATION
BARDOFF, Julian	5212	Principal Civil Engineer
BARTLETT, Jessie	7328	Operating Engineer
BOWERS, Daniel	7355	Truck Driver
BOYD, Kenneth	5166	General Manager
BROSIO, Victor	7388	Utility Plumber
BROWN, John	7355	Truck Driver
BUCKLEY, Frank	7388	Utility Plumber
CAMARENA, Victor	2472	Senior Water Chemist
CAMPILLO, Alice	1424	Clerk Typist
CAMPILLO, Anthony	9156	Senior Claims Investigator
CLAPS, Mario	1632	Senior Account Clerk
CONROY, Coleman	7388	Utility Plumber
DOMENIGONI, Paul	3416	Gardener
ESCUTON, Aida	1478	Senior Water Service Clerk
HACKETT, Charles	7284	Utility Plumber Supervisor II
HANNAN, Eugene	7317	Senior Water Service Inspector
HART, Leonard	7463	Utility Plumber Apprentice
HOENE, Richard	6318	Construction Inspector
MATULICH, George	7205	Chief Stationary Engineer
McCARTE, Archibald	7514	Laborer
MILLER, Thomas	7388	Utility Plumber
OCONNELL, William	7318	Electrical Technician
PESCE, Tillio	7353	Water Meter Repairman
PORTER, Jack	7309	Auto Painter
RAY, Harlan	5208	Civil Engineer
REEN, Maureen	1620	Billing Auditor
ROPER, Robert	7284	Utility Plumber Supervisor II
SCOTT, Marvin	7388	Utility Plumber
STORM, William	3416	Gardener
VERZA, Joe	7317	Senior Water Service Inspector
WALDRON, Louis Jr.	7388	Utility Plumber
WIDELL, Jessie	1480	Principal Water Service Clerk

IN MEMORIAM

PYLE, Gilbert	7388	Utility Plumber
VEAL, Joseph	7410	Auto Service Worker